

135-TRC-09-009

**SAFETY COMPLIANCE TESTING FOR FMVSS 135
Passenger Car Brake Systems**

Daimler AG Stuttgart
2009 Mercedes-Benz C300, 4-Door Sedan
NHTSA No. C90513

TRANSPORTATION RESEARCH CENTER INC.
10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: May 15, 2009

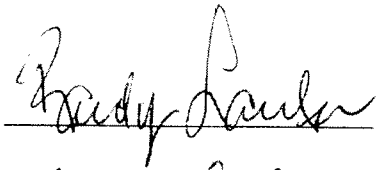
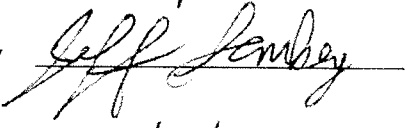
FINAL REPORT

Prepared Under Contract No.: DTNH22-06-C-00033

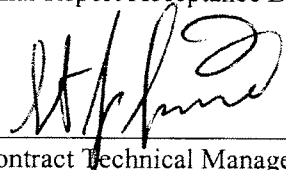
U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue S.E.
West Building 4th Floor
OVSC (NVS-221)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-C-00033.

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products of manufacturers.

Prepared By 
Approved By 
Approval Date: 5/15/09

Final Report Acceptance By OVSC:


Contract Technical Manager, Office of
Vehicle Safety Compliance
5/26/09
Acceptance Date

1. REPORT NUMBER: 135-TRC-09-009		2. GOVERNMENT ACCESSION NO.:		3. RECIPIENTS CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 135 Compliance Testing of a 2009 Mercedes-Benz C300, 4-Door Sedan, NHTSA No. C90513				5. REPORT DATE: May 15, 2009	
				6. PERFORMING ORGANIZATION CODE: TRC 20060110/9357	
7. AUTHOR(S): Project Manager: ALAN IDA Project Engineer: RANDALL A. LANDES				8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-135-093	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319				10. WORK UNIT NUMBER:	
				11. CONTRACT OR GRANT NO.: DTNH22-06-C-00033	
12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-221) 1200 New Jersey Avenue S.E. West Wing 4 th Floor Washington, DC 20590				13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 04/15/09 to 05/15/09	
				14. SPONSORING AGENCY CODE: NVS-221	
15. SUPPLEMENTARY NOTES:					
16. ABSTRACT: Compliance tests were conducted on the subject 2009 Mercedes-Benz C300, 4-Door Sedan, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-135-01 for the determination of FMVSS 135 compliance. Test failures identified were as follows: None.					
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 135				18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Information Services NPO-411 1200 New Jersey Ave, S.E. Washington, DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833	
19. SECURITY CLASSIF. (OF THIS REPORT): Unclassified	20. SECURITY CLASSIF. (OF THIS PAGE): Unclassified	21. NO. OF PAGES: 73		22. PRICE:	

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	Notice	i
	Table of Contents	iii
1.0	Introduction	1
2.0	Vehicle Information Sheet - Data Sheet 1	2
3.0	Summary of Testing	4
4.0	Vehicle Data	5
5.0	Test Data	7
6.0	Photographs	33
7.0	Instrumentation and Daily Calibrations	55
Appendix A	Copy of Manufacturer's Sticker	59
Appendix B	Discussion on Data	61
Appendix C	Contractor's Comments Procedure Modifications and Test Facility	63
Appendix D	Notice of Possible Non-Compliance	72

1.0 INTRODUCTION

Tests were conducted on a 2009 Mercedes-Benz C300, 4-Door Sedan, manufactured by Daimler AG Stuttgart, to determine compliance with FMVSS 135 "Passenger Car Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 135-01 and/or the corresponding TRC Inc. Test Procedure that was submitted to NHTSA for their approval. The Test Procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

7.5-Mile Test Track

Vehicle Maximum Speed

Burnish

Heating Snubs and Hot Performance Stops

Brake Cooling and Recovery Stops

Skid Pad

Cold Effectiveness Stops

High Speed Effectiveness Stops

Stops with Engine Off

Failed ABS

Failed Variable Proportioning Valve (if applicable)

Failed Hydraulic Circuits

Brake Power Assist Unit Failures

RBS Failure (if applicable)

EMF (Battery) Failure (if applicable)

Brake Slope

Parking Brake

Average PFC during the test period was 0.90 (Skid Pad) and 0.92 (Test Track) utilizing the ASTM E1337 w/E1336 tire method.

The test vehicle was ABS equipped. Therefore, the Wheel Lock Sequence and Adhesion Utilization Tests were not performed.

This vehicle met the requirements of FMVSS 135.

DATA SHEET 1 - VEHICLE INFORMATION

VEHICLE SPECS

Year: 2009	NHTSA No: C90513
Mfr: DIAMLER AG STUTTGART	GVWR (Kg): 2040
Make: MERCEDES-BENZ	GAWR Front(Kg): 995
Model: C300	GAWR Rear(Kg): 1085
Body Style: 4 DR. SEDAN	Wheelbase (mm): 2765.4
Mfr. Date: 07/08	Odometer: Start:71 MI. End:558 MI.
VIN: WDDGF54X49F226527	

BUSES ONLY

Chassis Mfg.: N/A
 Serial No.: N/A
 No. of Seats: N/A
 Manufacture Date: N/A

Engine Type: GASOLINE,SEQ.FI V-6 PISTON,DOHC,24 VALVE	Tire Size: 245/40 R17 91H
Displacement: 3.0 LITER	Tire Type: CONTIPRO CONTACT,RADIAL,TUBELESS
Engine Hspwr: 228	Tire Mfr.: CONTINENTAL
Idle Speed(rpm): 697	GVWR Front Press.(kpa): 190
Transmission Type: 6 SPD MANUAL,RWD	GVWR Rear Press.(kpa): 230
No. of Axles: 2	

BRAKE APPLY SYSTEM

Brake Series: Front:DISC Rear:DISC	Power Assist Unit: YES
Brake Actuation	Pwr Unit w/Accumulator: NO
(Hydr. Circuit Split): AXLE BY AXLE	Pwr Asst./Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: NO
Anti-Skid unit Mfr: CONTI-TEVES	Anti-Skid Device: YES
Parking Mechanism: NO	
Type of Parking Unit: NONE	
Mstr Cylinder Dia(mm): 25.4 Prim.; 20.64 Sec. - Manufacture's Data Pedal Ratio: 3.7: 1	

FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST,VENTED	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia.(mm): 295.12	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 27.96	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	
FRONT BRAKE COMPONENT DIMENSIONS AND CODES:	
Inboard (Leading)	Outboard (Trailing)
Width(mm): 52.58	Width(mm): 52.40
Length(mm): 123.11	Length(mm): 122.93
Thickness(mm): 12.89	Thickness(mm): 13.84
Lining Code/Color: FER 4240 118-2008	Lining Code/Color: FER 4240 118-2008
Hyd. Piston Dia.(mm): 59.82 (X1)	

PLANS/INTROPOS/SETUP + SETUP2

DATA SHEET 1 - (CONTINUED)

REAR SYSTEM

BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC

Material: CAST IRON

Drum Construction: N/A

LR Drum Shoe Cage Dia. (mm): 0.00

Disc Construction: INTEGRAL CAST

RR Drum Shoe Cage Dia. (mm): 0.00

Lining Construction: BONDED

LR Drum Dia. RESET (mm): 0.00

Rear Brake Dia. (mm): 300.04

RR Drum Dia. RESET (mm): 0.00

Rr Disc Thickness (mm): 10.04

Lining Construction: Bonded

REAR BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)

Outboard (Trailing)

Width (mm): 45.44

Width (mm): 45.59

Length (mm): 92.68

Length (mm): 92.67

Thickness (mm): 11.74

Thickness (mm): 11.48

Lining Code/Color: JURID 205FF

Lining Code/Color: JURID 205FF

Hyd Piston Dia (mm): 37.86 (X1)

OTHER COMPONENT INFORMATION:

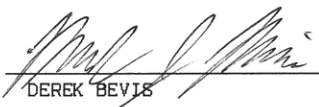
Friction-type Park Brake: N/A

Non-Service Brake Type

Parking Brake: FOOT-OPERATED

NOTE: If at any time after the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the COTR immediately.

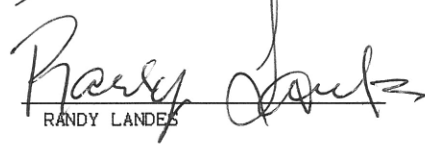
Technician:


DEREK BEVIS

Date:

5-15-09

Quality Assurance:


RANDY LANDES

3.0 SUMMARY OF TESTING

		Specification and Limit				TEST RESULTS (In compliance if one stop meets requirement)			
TEST	Loading Condi tion	Speed (km/h)	Min. Pedal Force (N)	Max. Pedal Force (N)	Stopping Distance Requirement (m)	Shortest Stop Min. Pedal Force (N)***	Shortest Stop Max. Pedal Force Newtons (Average – N)	Shortest Stop Stopping Distance (m) (Corrected)	PASS Fail
Equipment Requirements					Specified Equipment	Vehicle contains specified equipment			Pass
Vehicle Maximum Speed	LLVW	NA				208.8 km/h avg.			NA
Burnish	GVWR	80				200, 80 - 0 km/h stops @ 3.0 mpsps			NA
Wheel Lockup Sequence w/o ABS	GVWR				Lockup of front wheels prior to rear	ABS equipped – not required.			NA
Wheel Lockup Sequence w/o ABS	LLVW					ABS equipped – not required.			NA
Adhesion Utilization w/o ABS	LLVW				Rear axle adhesion utilization curve below specified value	ABS equipped – not required.			NA
Adhesion Utilization w/o ABS	GVWR					ABS equipped – not required.			NA
Cold Effectiveness	GVWR	100	65	500	70	5	450.8	48.4	Pass
High Speed Effectiveness	GVWR	160.0	65	500	spd. depend. – 187.5	5	484.2	116.9	Pass
Stops with Engine Off	GVWR	100	65	500	70	5	432.9	52.8	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	467.3	45.3	Pass
High Speed Effectiveness	LLVW	160.0	65	500	spd. depend. – 187.5	5	448.5	112.7	Pass
Failed Antilock	LLVW	100	65	500	85	5	155.3	60.8	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	478.9	68.1	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	168	5	438.1	108.8	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	424.0	74.6	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	168	5	462.8	102.0	Pass
Failed Antilock	GVWR	100	65	500	85	5	167.9	67.7	Pass
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Regenerative Brake System (RBS) Failure	GVWR	100	65	500	168	5	NA	NA	NA
Electromotive Force (EMF) – Battery Failure	GVWR	100	65	500	70	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	486.3	152.7	Pass
Parking Brake - Uphill	GVWR	-	-	500	Hold for 5 min.?	NA	497.0	Yes-Holds	Pass
Parking Brake - Downhill	GVWR	-	-	500	Hold for 5 min.?	NA	496.0	Yes-Holds	Pass
Heating Snubs	GVWR	120-60	NA	NA	15 Snubs- 3.0 mpsps	5	48 Vis. Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	376 avg	74.0	5	324.6 (287.9)	56.2	Pass
Hot Performance Stop #2	GVWR	100	65	500	89	5	457.6 (377.2)	54.8	Pass
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	54 Vis. Avg.	NA	NA
Recovery Performance Stop #1	GVWR	100	65	376 avg	One of the two stops between 35.6 and 64.9 meters.	5	414.6 (315.1)	50.5	Pass
Recovery Performance Stop #2	GVWR	100	65	376 avg		5	399.6 (294.0)	50.0	
Final Inspection-Brake Integrity	Check components for detachment, fracture or lubricants.					No detachments or fractures-normal appear. & colr.			Pass
Final Inspection-Reservoirs/Warning Indicators	Master cylinder or brake power reservoir shall meet the volume and label requirements of S5.4.2 and S5.4.3.					Brake system has sufficient capacity and indicators are in compliance.			Pass

*** Note: The Shortest Stop Minimum Pedal Force represents the minimum force value required to engage the data acquisition's recording mode.

DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2009 MERCEDES-BENZ C300

NHTSA No. C90513 Date: 04/20/09

Tire Pressure(cold): Front (kpa) 190 Rear (kpa) 230
 Odometer: Start 71 MI. End 558 MI.
 Scale(s) Used: TRC Scales

NOTE: GVWR, LLVW and axle weights to be measured within +0% and -1%.

GVWR/GAWR INFORMATION
 (From Veh. Certification Label)

UNLOADED VEHICLE WEIGHT(UVW)

GVWR(Kg): 2040
 GAWR Front(Kg): 995
 GAWR Rear(Kg): 1085

L Front(Kg): 412 L Rear(Kg): 372
 R Front(Kg): 412 R Rear(Kg): 375
 T Front(Kg): 824 T Rear(Kg): 747
 Total UVW(Kg): 1571

TARGET LIGHT LOADED WEIGHT(LLVW):

ACTUAL LIGHT LOADED WEIGHT(LLVW):

NOTE 1: LLVW = UVW+181.4Kg

NOTE 2: Weight distributed in front passenger seat area.

NOTE 3: Neither axle load at LLVW less than at UVW; ballast as required.

L Front(Kg): 455 L Rear(Kg): 420
 R Front(Kg): 452 R Rear(Kg): 429
 T Front(Kg): 907 T Rear(Kg): 849
 Total LLVW(Kg): 1756

L Front(Kg): 470 L Rear(Kg): 430
 R Front(Kg): 437 R Rear(Kg): 419
 T Front(Kg): 907 T Rear(Kg): 849
 Total Actual Test LLVW(Kg): 1756

Load: Driver/Observer 118(Kg) + Instru.41(Kg) + Ballast 22(Kg) = 181(Kg)

FULLY LOADED TEST WEIGHT (ACTUAL GVWR)

NOTE 1: Vehicle loaded so axle loads proportional to GAWR shown previously.

NOTE 2: But no axle weight to be less than at LLVW.

NOTE 3: If weight on any axle at LLVW exceeds the axle's proportional share of the GVWR, the load required to reach GVWR is placed so that the weight on that axle remains the same as at LLVW.

L Front(Kg): 484 L Rear(Kg): 526
 R Front(Kg): 492 R Rear(Kg): 538
 T Front(Kg): 976 T Rear(Kg): 1064
 Total Fully Loaded GVWR(Kg): 2040

Load: Driver/Observer 118(Kg) + Instru. 41(Kg) + Ballast 310(Kg)= 469(kg)

Technician: _____

DEREK BEVIS

Date: _____

5/18/09

Quality Assurance: _____

RANDY LANDES

DATA SHEET 4 - EQUIPMENT REQUIREMENTS (S5)

SERVICE BRAKE SYSTEM (S5.1)

Vehicle equipped with a service brake system acting on all wheels? YES

Wear Adjustment (S5.1.1):

Service Brakes are compensated for wear by means of a system of automatic adjustment? YES

Describe: DISC:AUTOMATIC CLEARANCE TAKE-UP.

Wear Status (S5.1.2):

Wear status of service brakes is indicated by:

(A) Acoustic or optical device? YES

Describe: OPTICAL BRAKE WEAR SENSORS ON RF&RR INBOARD BRK PADS.

(B) Visual check outside or under vehicle? YES

Describe: FRONT & REAR:LOOK THROUGH CALIPER.

PARKING BRAKE SYSTEM (S5.2)

Vehicle equipped with a parking brake system of a friction type with solely mechanical means to retain engagement: YES

CONTROLS (S5.3)

(A) Service brakes activated by means of a foot control? YES

(B) Parking brake control is independent of the service brake control? YES

(C) Parking brake control is hand or foot operated? YES

(D) ABS, if equipped, cannot be manually disabled? YES

DATA INDICATES COMPLIANCE: YES

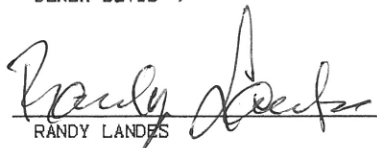
COMMENTS: NONE.

Tester/Technician:


DEREK BEVIS

Date: 5-15-09

Quality Assurance:


RANDY LANDES

DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2009 MERCEDES-BENZ C300

NHTSA No. C90513

Date: 04/20/09

Ambient Temperature: 49°F

Wind Velocity: 17(MPH)

Road PFC: .93

Wind Direction: 284°

Odometer: Start 90(mi) End 106(mi)

TEST WEIGHT: Total (Kg): 1756

Front (Kg): 907

Rear (Kg): 849

ESTABLISH VEHICLE MAXIMUM SPEED

VEHICLE LOAD: LLVW

IBT: N/A

GEAR: Drive

DECEL RATE: N/A

PEDAL FORCE: N/A

WHEEL LOCKUP: N/A

TEST SPEED: Maximum attainable from

INTERVAL: N/A

a standing start in 3.2 km.

1. Ballast Vehicle to LLVW
2. Accelerate at a maximum rate from a standing start for a distance of 3.2 km on a level surface.
3. Repeat in opposite direction.
4. Record speed attained in each direction and use the average of the two runs.

	DIRECTION	MAX SPEED (km/h)		Time 0 - 100 km/h (seconds)
		Visual	Recorded	
Run No. 1	South	209	208.8	9.72
Run No. 2	North	209	208.8	8.75

AVERAGE = 208.8 km/h

COMMENTS: INV DATA, Section 0001, 04/22/09, 11:48:06

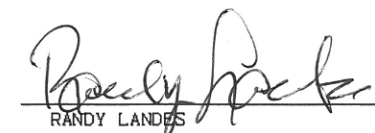
Tester/Technician:


DEREK BEVIS

Date:

5-15-09

Quality Assurance:


RANDY LANDES

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/22/09

DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0002, 04/22/09, 14:00:18

Weather Conditions: 57°F Wind: 4 mph 140°

Start Odo.: 112 End Odo.: 368

Schedule:

Initial Brake Temperature Less Than 100°C
 Initial Speed 80 km/h to zero
 200 stops with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reduce IBT to 100 C° or 2 km distance, whichever occurs first.
 Constant decel rate: 3.0 m/s²
 Pedal force adjusted to maintain constant decel.
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	MAX. PEDAL FORCE	AVG. PEDAL FORCE	AVG. DECEL
	SPD (kph)	IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)	(N)	(N)	(m/sec ²)
=====	=====	=====	=====	=====	=====	=====	=====	=====
1	80.81	59	55	49	39	82.25	63.74	2.97
10	80.24	122	107	103	93	78.85	53.98	2.95
20	79.33	122	106	107	98	71.77	51.10	3.02
30	80.42	113	99	104	98	74.00	52.53	3.04
40	80.15	112	94	104	101	71.81	55.74	3.02
50	81.04	117	107	104	101	67.60	44.74	3.06
60	79.89	117	103	102	104	68.47	49.99	3.07
70	80.80	109	96	113	109	68.52	49.90	3.11
80	78.99	111	95	114	112	60.46	53.05	2.98
90	79.76	111	97	114	113	63.39	47.18	2.97
100	79.83	119	99	112	115	59.41	45.02	2.97
110	79.97	119	97	112	114	56.20	43.85	2.93
120	79.97	123	106	112	113	68.76	49.31	3.10
130	78.14	123	108	116	118	63.67	44.77	2.96
140	79.38	122	110	114	118	65.15	47.03	3.01
150	79.60	118	110	113	116	65.55	43.72	3.03
160	80.62	119	112	116	119	62.71	47.12	3.11
170	79.55	112	102	108	108	69.88	52.34	3.43
180	79.01	124	116	121	121	64.04	49.28	3.04
190	80.50	125	116	120	124	60.21	45.39	3.16
200	81.16	119	111	117	123	65.92	47.37	3.12

COMMENTS: THIS VEHICLE ABS EQUIPPED. DATA SHEETS 7-10 NOT INCLUDED.

BRAKE ADJUSTMENT

Schedule:

Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
 Right Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
 Left Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED.
 Right Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED.
 DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: RANDY LANDES

Observer: NONE
 Date: 05/07/09
 Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0015, 04/24/09, 08:44:08

Weather Conditions: 68°F Wind: 17 mph 219° Start Odo.: 373 End Odo.: 379

Schedule:

Initial Brake Temperature 65 - 100 C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.47	79	79	74	79	49.2	48.7	474.43	396.75	11.31	7.54
2	99.71	97	92	82	78	48.7	49.0	463.35	381.96	11.35	7.55
3	100.69	94	88	77	69	49.1	48.4	461.56	371.80	10.95	7.19
4	99.88	93	84	75	63	49.8	49.9	428.12	352.41	11.21	7.43
5	100.92	92	83	73	59	49.4	48.5	462.45	376.64	11.71	7.57
6	100.06	94	81	73	58	48.4	48.4	450.75	376.24	11.84	7.46

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 04/24/09, 09:18:17

Weather Conditions: 72°F Wind: 23 mph 228° Start Odo: 380 End Odo: 389

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80% max km/h, not greater than 160km/h
 6 stops with transmission in gear
 Target Initial Speed: 160.00 kph

Performance Requirements:

One Stop with:
 Stopping Distance less than: 187.5 meter
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
1	158.59	88	75	67	53	120.1	122.2	455.20	388.50	12.66	7.95
2	166.83	92	71	66	47	138.0	126.9	302.97	238.65	10.79	7.66
3	159.08	91	68	62	43	119.5	120.8	469.12	388.62	11.55	8.32
4	159.52	93	73	64	48	116.2	116.9	484.19	393.16	11.24	8.32
5	159.16	92	71	65	46	120.4	121.7	490.61	360.00	11.85	8.30
6	159.53	91	67	63	44	116.9	117.6	445.53	362.56	12.28	8.34

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: INV DATA, Section 0025, 04/24/09, 10:26:40

Weather Conditions: 75°F Wind: 23 mph 241° Start Odo.: 389 End Odo.: 395

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
	SPD	IBT	IBT	IBT	IBT						
	(kph)	(°C)	(°C)	(°C)	(°C)						
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	100.19	93	68	64	44	56.1	55.9	412.65	357.31	12.19	6.61
2	99.43	93	68	63	46	59.0	59.6	355.80	287.81	8.88	6.52
3	101.51	94	74	66	51	55.8	54.1	386.03	337.40	9.83	6.79
4	100.29	93	73	66	50	53.6	53.3	414.47	368.28	9.64	6.97
5	99.47	96	77	68	53	52.4	52.9	440.96	392.36	9.95	7.07
6	99.86	97	77	69	52	52.6	52.8	432.87	379.58	10.01	7.10

STOP #	DRIVER VEHICLE STOP COMMENTS		
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 14 - COLD EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0030, 04/24/09, 13:11:05

Weather Conditions: 81°F Wind: 21 mph 221° Start Odo.: 402 End Odo.: 408

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG.	
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)				PEDAL FORCE (N)	DECEL (m/sec ²)
1	100.62	83	82	72	69	48.5	47.9	438.62	346.11	12.70
2	101.13	99	89	76	68	46.4	45.3	467.33	383.72	12.07
3	99.96	97	79	66	57	48.1	48.2	386.00	319.74	11.44
4	99.42	92	79	64	53	46.5	47.1	455.35	375.29	12.24
5	100.53	95	81	64	54	47.4	46.9	456.68	374.79	11.65
6	100.51	97	81	63	53	47.6	47.1	429.60	368.52	11.66

STOP #	DRIVER VEHICLE STOP COMMENTS		
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0035, 04/24/09, 13:56:30

Weather Conditions: 81°F Wind: 28 mph 225° Start Odo.: 409 End Odo.: 422

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80% max km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than 187.5m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(SAE 299) (meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	159.84	102	86	63	57	118.6	118.8	439.60	364.48	13.28	8.16
2	161.31	91	71	56	46	119.0	117.0	507.63	419.75	12.43	8.34
3	159.59	94	74	60	49	115.3	115.9	473.38	360.28	13.16	8.46
4	159.69	93	73	60	49	112.3	112.7	448.47	364.11	12.65	8.71
5	159.59	92	73	60	49	112.2	112.8	484.96	382.11	12.55	8.60
6	158.90	94	83	64	56	117.4	119.0	458.53	328.88	12.44	8.29

STOP # DRIVER VEHICLE STOP COMMENTS
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	DRIVER VEHICLE STOP COMMENTS
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES
5	- NOX SOUTH YES
6	- NOX SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/24/09

DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: INV DATA, Section 0040, 04/24/09, 15:05:49

Weather Conditions: 82°F Wind: 25 mph 221° Start Odo.: 425 End Odo.: 438

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 85m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.22	94	82	61	54	61.1	60.8	155.34	138.73	8.69	6.24
2	100.62	97	86	67	61	69.8	69.0	131.60	109.80	7.86	5.64
3	101.16	90	79	67	64	64.1	62.6	139.54	115.91	8.85	6.08
4	100.00	97	90	75	68	69.3	69.3	140.15	118.57	8.04	5.54
5	99.72	98	90	74	68	64.0	64.3	136.26	110.91	8.59	5.97
6	99.93	98	89	74	67	72.5	72.6	137.93	117.27	7.94	5.53

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

Comments: See Appendix C.

How was the ABS failure induced: FAILED ABS IN WORKSHOP MENU IN THE DIC, PER MANF. RESPONSE.

Is brake system indicator lamp activated: YES (X) NO ()

Vehicle equipped with ABS integral variable proportioning valve. Cannot separately fail. Data Sheet 17 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/28/09

DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLVW

Testing Conditions: INV DATA, Section 0050, 04/28/09, 08:41:45

Weather Conditions: 68°F Wind: 12 mph 257° Start Odo.: 447 End Odo.: 450

Method of simulating failure: Disconnected Brake Line Front Port @ ABS Module

System Portion Failed: LR & RR

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.13	84	81	27	28	68.9	68.7	465.84	387.02	8.52	5.66
2	100.31	100	91	27	27	69.4	68.9	448.93	351.87	8.32	5.48
3	99.77	96	79	28	26	68.6	69.0	440.38	373.52	8.58	5.45
4	99.48	96	76	27	26	67.4	68.1	478.85	394.61	8.93	5.63

STOP # DRIVER VEHICLE STOP COMMENTS
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	Wheel Lock-Up	Direction of Stop	Stay in Lane
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES

Comments: See Appendix C.

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 186 ML

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLVW

Testing Conditions: INV DATA, Section 0055, 04/29/09, 08:31:35

Weather Conditions: 48°F Wind: 3 mph 63° Start Odo.: 456 End Odo.: 467

Method of simulating failure: Disconnected Brake Line Rear Port @ ABS Module

System Portion Failed: LF & RF

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

		LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		
	INIT	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
STOP	SPD	IBT	IBT	IBT	IBT	DISTANCE	(SAE 299)	FORCE	FORCE	DECEL	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	99.91	29	29	84	79	113.0	113.2	454.72	370.95	6.78	3.38
2	99.97	35	34	93	96	108.7	108.8	438.09	380.39	7.57	3.48
3	99.96	39	36	83	93	111.6	111.7	446.20	386.93	6.81	3.51
4	99.25	40	41	83	94	109.0	110.6	453.73	372.87	7.53	3.38

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
=====	=====			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Comments: See Appendix C.

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 186 ML

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
Make: MERCEDES-BENZ
Model: C300
Body Style: 4 DR. SEDAN
Front Cold Tire Pressure: 190 (Kpa)
Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: INV DATA, Section 0060, 04/29/09, 10:27:59

Weather Conditions: 51°F Wind: 4 mph 87° Start Odo.: 490 End Odo.: 498

Method of simulating failure: Disconnected Brake Line Front Port @ ABS Module

System Portion Failed: LR & RR

Schedule:

Initial Brake Temperature 65-100°C

Initial Speed 100 km/h to zero

6 stops with transmission in neutral

Performance Requirements:

One Stop with:

Stopping Distance less than **168m**

Pedal force between 65N and 500N

No Lock-Up allowed longer than 0.1 sec above 15 km/h

Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	99.87	91	94	38	44	77.8	78.0	438.43	371.79	7.19	4.82
2	100.14	94	88	36	44	74.8	74.6	424.03	366.74	7.27	5.16
3	101.39	95	87	33	44	77.3	75.2	483.24	332.76	7.59	4.80
4	100.35	94	87	33	41	76.5	76.0	430.87	356.58	8.03	4.89

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Comments: See Appendix C.

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO (L)

Driver: DEREK BEVIS
Recorded Data Processed by: CHUCK JENKINS
Approving Laboratory Official: RANDY LANDES

Observer: NONE
Date: 05/07/09
Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: INV DATA, Section 0065, 04/29/09, 09:18:22

Weather Conditions: 50°F Wind: 4 mph 97° Start Odo.: 472 End Odo.: 484

Method of simulating failure: Disconnected Brake Line Rear Port @ ABS Module

System Portion Failed: LF & RF

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	99.23	39	40	87	92	102.2	103.8	485.13	390.09	6.01	3.66
2	100.10	39	39	83	97	103.0	102.8	513.78	397.99	6.14	3.61
3	100.49	34	39	79	96	104.9	103.9	467.94	381.66	5.67	3.55
4	101.63	39	39	81	99	105.4	102.0	462.80	373.49	5.79	3.53

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Comments: See Appendix C.

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO (L)

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVWR

Testing Conditions: INV DATA, Section 0070, 04/29/09, 11:22:01

Weather Conditions: 52°F Wind: 4 mph 63° Start Odo.: 502 End Odo.: 516

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 85m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT (°C)	RIGHT FRONT (°C)	LEFT REAR (°C)	RIGHT REAR (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		IBT	IBT	IBT	IBT						
1	100.69	94	93	67	74	81.8	80.7	150.63	128.80	6.12	4.74
2	100.02	94	90	70	78	67.7	67.7	167.91	107.43	7.37	5.30
3	101.07	92	85	68	78	74.3	72.7	159.37	100.22	7.70	4.75
4	100.65	92	84	68	82	77.3	76.3	142.43	124.00	6.56	4.96
5	100.57	92	83	71	81	89.5	88.4	135.61	112.94	5.98	4.38
6	99.77	89	80	71	83	75.4	75.7	138.99	107.68	6.54	4.90

STOP DRIVER VEHICLE STOP COMMENTS
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

Comments: See Appendix C.

How was the ABS failure induced: FAILED ABS IN WORKSHOP MENU IN THE DIC, PER MANF. RESPONSE.

Is brake system indicator lamp activated: YES (X) NO ()

Vehicle equipped with ABS integral variable proportioning valve. Cannot separately fail. Data Sheet 23 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 24 - BRAKE POWER UNIT OR PWR ASSIST UNIT IN/OP AT GVWR

Testing Conditions: INV DATA, Section 0080, 04/29/09, 12:56:56

Weather Conditions: 55°F Wind: 3 mph 94° Start Odo.: 519 End Odo.: 528

Failure Simulation: Disconnect primary source of power.

Method of rendering inoperative: Removed Engine Vacuum Hose at Booster

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.74	78	79	76	79	172.4	169.9	476.49	450.23	3.32	2.23
2	100.06	96	92	89	92	163.7	163.5	486.71	451.00	3.30	2.29
3	100.48	99	92	86	89	160.6	159.1	475.81	452.89	3.67	2.50
4	100.64	94	88	82	88	156.7	154.7	480.80	457.97	5.51	2.52
5	100.92	96	90	83	90	155.5	152.7	486.34	451.72	4.06	2.53
6	99.02	95	90	81	87	154.7	157.8	489.10	448.81	6.91	2.54

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

Is the brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 25 - PARKING BRAKE AT GVWR

Testing Conditions: INV DATA, Section 0085, 04/29/09, 14:33:07

Parking brake: NONE

Non-service type: FOOT-OPERATED

Service type: N/A

Weather Conditions: 57°F

Wind: 1 mph 63°

Start Odo.: 530

End Odo.: 530

Test Weight: Total:2040kg

Front: 976kg

Rear:1064kg

Schedule:

Initial Brake Temperature <100°C or (Ambient temp.
 if non-service brake type materials)

Loaded to GVWR with transmission in neutral

Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:

Parking brake must hold the vehicle stationary
 in both directions for 5 minutes each.

Pedal force: Hand control: <400 N

Foot control: <500 N

NOTE: For vehicles with parking brake systems not utilizing the
 service brake friction elements, the friction elements of such systems
 are to be burnished prior to parking brake tests according to the
 manufacturer's published recommendation as furnished to the purchaser.
 If no recommendations are furnished, test the system in an unburnished
 condition. If recommendations are furnished, record method used.

	MAX SERVICE	MAX P-BRAKE	LEFT REAR	RIGHT REAR	AVG REAR		DRIVER VEHICLE STOP COMMENTS			
APPLY	FORCE	FORCE	IBT	IBT	IBT		(Direction of Stop (Up/Down) - Brake holds/fails)			
#	(N)	(N)	(°C)	(°C)	(°C)		=====			
1	109.7	497.0	42	44	43.1	-	0 REAPPLY	UPHILL	HOLDS	20%
2	86.1	496.0	41	42	41.7	-	0 REAPPLY	DOWNHILL	HOLDS	20%

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 05/07/09

Approving Laboratory Official: RANDY LANDES

Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: INV DATA, Section 0090, 04/29/09, 15:27:06

Schedule:

Conduct 15 snubs from 120 Km/h or 80% Vmax, whichever is slower, to 1/2 of initial speed.
 Attain required decel in 1 second and maintain that decel.
 Interval between snubs is 45 seconds and WOT to initial speed.

Performance Requirements:

Initial IBT for first snub is 55-65°C
 Maintain 3.0 m/s/s deceleration
 Vehicle Must stay in lane of 3.5m

SNUB #	AVG. DECEL (m/sec ²)	Time Between Snubs (second)	AVG. PEDAL FORCE (N)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	INIT SPD (kph)
1	3.32	--NA--	53.27	58	62	52	54	120.41
2	3.20	81	39.33	106	102	88	91	119.54
3	3.11	45	44.91	151	144	123	124	120.13
4	2.93	45	39.30	189	177	154	151	120.83
5	3.01	44	45.99	218	202	177	177	119.69
6	2.80	46	48.47	246	228	196	194	120.13
7	2.98	45	51.94	264	249	213	209	118.35
8	2.93	45	46.73	279	266	225	223	121.10
9	2.96	44	51.81	292	279	233	236	120.01
10	2.84	45	47.63	301	292	244	247	119.46
11	2.81	45	47.88	308	298	253	257	120.31
12	2.94	46	44.66	313	303	261	266	118.99
13	3.04	44	56.64	316	308	269	273	120.05
14	2.83	46	48.44	319	314	278	284	119.73
15	2.87	45	51.90	322	314	286	292	118.95

STOP DRIVER VEHICLE SNUB COMMENTS
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	-	NOX	EAST YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	WEST YES
6	-	NOX	NORTH YES
7	-	NOX	NORTH YES
8	-	NOX	NORTH YES
9	-	NOX	NORTH YES
10	-	NOX	EAST YES
11	-	NOX	SOUTH YES
12	-	NOX	SOUTH YES
13	-	NOX	SOUTH YES
14	-	NOX	WEST YES
15	-	NOX	WEST YES

Comments: See Appendix C.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0095, 04/29/09, 15:38:42

Schedule:

Make 2 stops from 100 kph
 Pedal Force: 1st stop is done with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.
 2nd stop is done with a force less than 500 N.
 No Lock-Up allowed longer than 0.1 sec above 15 km/h.
Distance Requirements are based on the following:
 shortest stop in Data Sheet 11 is: 6
 Initial speed of stop: 100.06 (kph)
 Actual distance of stop: 48.4 (meter)
 Average pedal force: 376.2 (N)

Performance Requirements:

Stop Number 1 must be less than: 74.0 (meter)
 In addition the stopping distance for at least one of the of the two hot stops must be less than: 89 (meter)

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(SAE 299) (meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.56	331	328	302	308	56.8	56.2	324.56	287.86	13.62	6.24
2	99.43	338	338	307	320	54.2	54.8	457.57	377.17	19.77	6.59

STOP #	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	NORTH	YES
2	-	NOX	NORTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: RANDY LANDES
 Observer: NONE
 Date: 05/07/09
 Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 0100, 04/29/09, 15:41:12

Schedule:

Initial Brake Temperature:
 Achieved on completing Hot Performance
 Initial Speed 50 km/h to zero
 4 stops with transmission in gear

Performance Requirements:

Constant Decel rate: 3.0 m/s/s
 Pedal force adjusted as necessary
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	AVG. DECEL (m/sec ²)	AVG. PEDAL FORCE (N)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)
1	51.47	2.69	61.72	306	309	279	285
2	50.74	2.72	54.07	257	264	237	241
3	51.06	2.88	50.94	216	225	203	207
4	49.40	2.85	48.22	196	204	188	192

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	-	NOX	NORTH YES
2	-	NOX	NORTH YES
3	-	NOX	EAST YES
4	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS	Observer: NONE
Recorded Data Processed by: CHUCK JENKINS	Date: 05/07/09
Approving Laboratory Official: RANDY LANDES	Date: 05/11/09

Vehicle: 2009 DIAMLER AG STUT NHTSA NUMBER: C90513
 Make: MERCEDES-BENZ
 Model: C300
 Body Style: 4 DR. SEDAN
 Front Cold Tire Pressure: 190 (Kpa)
 Rear Cold Tire Pressure: 230 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 04/29/09

DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0105, 04/29/09, 15:46:38

Weather Conditions: 59°F Wind: 5 mph 102° Start Odo.: 532 End Odo.: 551

Schedule:

Make 2 stops from 100 kph
 Pedal Force: Both stops are performed with an average force
 less than the average recorded in the
 shortest GVWR Cold Effectiveness stop.

Performance Requirements:

One of the two stops must be within the following limits:
 Upper limit of corrected stopping distance: 64.9 (meter)
 Lower limit of corrected stopping distance: 35.6 (meter)

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

shortest stop in Data Sheet 11 is: Stop6
 Initial speed of stop: 100.06 (kph)
 Actual distance of stop: 48.4 (meter)
 Average pedal force: 376.2 (N)

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.85	196	204	189	194	51.3	50.5	414.55	315.05	11.30	7.20
2	100.49	218	226	***	216	50.4	50.0	399.60	293.96	11.26	7.13

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock-Up	-	Direction of Stop	-	Stay in Lane)
1	-		NOX		SOUTH YES
2	-		NOX		SOUTH YES

Comments: See Appendix C.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 05/07/09
 Approving Laboratory Official: RANDY LANDES Date: 05/11/09

DATA SHEET 30 (Part 1 of 5)
6.0 Test Completion Inspection (7.17)

VEHICLE: 2009 Mercedes-Benz C300

NHTSA NO.: C90513

ODO.: 558 mi.

DATE: 05/05/09

System Integrity (S5.6)

Each vehicle shall meet the complete performance requirements of this standard without:

(a) Detachment or fracture of any component of the braking system such as brake springs and brake shoes or disc pad facings, other than minor cracks, that do not impair attachment of the friction facings. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 percent of the lining on any single frictional element.

(b) Any visible brake fluid or lubricant on the friction surface of the brake or leakage at the master cylinder or brake power unit reservoir cover, seal, and filler openings.

Friction Material Condition: Primary/Inner		Friction Material Condition: Secondary/Outer	
LF	Normal Appearance & Color	LF	Normal Appearance & Color
RF	Normal Appearance & Color	RF	Normal Appearance & Color
LR	Normal Appearance & Color	LF	Normal Appearance & Color
RR	Normal Appearance & Color	RR	Normal Appearance & Color
Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal Appearance & Color	LF	None
RF	Normal Appearance & Color	RF	None
LR	Normal Appearance & Color	LR	None
RR	Normal Appearance & Color	RR	None
Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Good	Brk/Pedal	Good
RF	Good	Power Brk	Good
LR	Good	Stop/Lamp	Good
RR	Good	Linkage	Good
M/Cyl	Good	Other	NA

COMPLIANCE: Yes X No

Comments: None.

Technician: Derek Bevis

DATA SHEET 30 (Part 2 of 5)
TEST COMPLETION INSPECTION (S7.17)

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; GVWR: 2040 kg
MASTER CYLINDER RESERVOIR:

DATE	05/04/09	Requirements	Pass	Fail
Reservoir Compartments (S5.4.1)				
(1) Does master cylinder have a reservoir compartment for each brake subsystem?	<u>Yes</u>	Master cylinder shall have a reservoir compartment for each subsystem.	X	
	No			
(2) Does loss of fluid in one compartment result in complete loss from another compartment?	Yes	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	
	<u>No</u>			
Reservoir Capacity (S5.4.2)				
Shall conform to requirements (1) or (2), state units:				
(1) For reservoirs having completely separate compartments for each subsystem (two separate, independent reservoirs):				
Subsystem 1 Subsystem reservoir capacity		Each compartment (reservoir) shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that independent compartment/reservoir moves from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position. (Use Data Sheet 31 and Appendix 1A)	NA	NA
Subsystem 1 Fluid displaced from new to worn lining				
Subsystem 2 Subsystem reservoir capacity			NA	NA
Subsystem 2 Fluid displaced from new to worn lining				
2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems:				
Total minimum capacity for the entire master cylinder reservoir (includes individual compartment reservoirs)	322 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper positions moving from new lining to full worn condition as above.	X	
Fluid displaced from new to worn linings (ALL linings)	166.9 ml*			
*Value calculated from Data Sheet 31				

Comments: None.

Technician: Derek Bevis

DATA SHEET 30 (Part 3 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; GVWR: 2040 kg

MASTER CYLINDER RESERVOIR:

DATE	05/04/09	Requirements	Pass	Fail
Master Cylinder Piston Displacement(S5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Subsystem No. 1.	18.0 ml	Individual partial compartments of reservoir shall each have a minimum of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem during a <u>full stroke</u> of the piston. NOTE: Procedure uses three strokes to ensure an accurate measurement.		
Fluid displaced by three strokes of master cylinder piston for Secondary (Subsystem No. 2)	39.0 ml			
Fluid displaced per stroke, Subsystem No. 1.	6.0 ml			
Fluid displaced per stroke, Subsystem No. 2.	13.0 ml			
Fluid available in partial compartment Subsystem No. 1	50.0 ml		X	
Fluid available in partial compartment Subsystem No. 2	52.0 ml		X	
Brake Power Unit Reservoir (S5.4.2)				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to fluid displacement required to charge the system pistons on accumulators to normal operating pressure <u>plus</u> displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
Reservoir Labeling (S5.4.3)				
Exact copy of reservoir label: On top of master cylinder reservoir: <u>WARNING</u> <u>CLEAN FILLER CAP BEFORE REMOVING</u> <u>USE ONLY DOT 4+ BRAKE FLUID FROM A</u> <u>SEALED CONTAINER.</u>		Label shall read: "Warning, clean filler cap before removing; use only * fluid from a sealed container". * Fluid type specified in 49 CFR 571.116	X	
Measure letter height	3.3 mm	Letters shall be at least 3.2 mm/ 0.125" high	X	
Describe label attachment method and location. <u>Embossed on top of the master cylinder</u> <u>reservoir filler cap.</u>		Lettering shall be permanently affixed, engraved or embossed and located so as to be visible by direct view either on or within 100 mm/3.94 inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	<u>Yes</u>	If label is not engraved or embossed, letters shall be of a color that contrasts with the background	NA	
	No			

Comments: None.

Technician: Derek Bevis

DATA SHEET 30 (Part 4 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; DATE: 05/04/09
 BRAKE SYSTEM WARNING INDICATOR (S5.5)

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
Brake Systems Indicator Lamp Function Check (S5.5.2) (Bulb and systems check)				
Describe location of brake indicator lamp: <u>Lower left quadrant of the instrument cluster.</u>	NA	Shall be in front, and in clear view, of driver.	X	
Does lamp light with ignition (start) switch at ON/RUN?	Yes	Automatic activation when ignition switch is "on" when engine not running , or ignition between "on" and "start" if is manufacturer check position- OR -single manual action by driver	X	
Does lamp light with ignition between ON and Start?	Yes			
Brake check description in owner's manual?	Yes	Manufacturer shall explain the brake check function test procedure in the owner's manual.	X	
Brake System Warning Indicator ACTIVATION (S5.5.1) DURATION (S5.5.3) FUNCTION (S5.5.4)				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 218 psi (split system)	NA	When ignition (Start) switch is ON , lamp must light whenever (A), (B), (C), or (D) occurs. In addition, if service brake system is not a split system, audible warning must be activated when any condition in (A) exists. Visual warning indicator for non-split systems must be flashing.	X	
(2) If any reservoir falls below either "safe" level or 25% of capacity, whichever is greater. Values: 136 ml or cc (below "min" mark).	Yes			
(3) On or before supply pressure to brake power unit falls to 50%	NA			
B. Electrical functional failure in an antilock or variable brake proportioning system.	Yes		X	
C. Application of the parking brake.	Yes			
D. Brake lining wear-out if optical warning.	Yes*			
E. <i>For a vehicle with <u>electrically-actuated service brakes</u>, failure of the source of electric power to the brakes or diminution of state of charge of the batteries.</i>	NA			
F. <i>For a vehicle with <u>electric transmission of the service brake control signal</u>, failure to a brake control circuit.</i>	NA			
G. <i>For an EV with RBS that is part of the service brake system failure of RBS.</i>	NA			
Must have Audible alarm if <u>not split system</u> and a condition in (a) above exists?	NA			
If condition (A) (2) above does not exist, then fluid reservoir must be transparent for fluid check without the need for reservoir to be opened? (S5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - ignition "on", and engine on or off? _____ (S5.5.3 DURATION))	Yes			
Visual warning – continuous or flashing?	Yes-Cont.			
Audible warning –continuous or flashing?	NA			

Comments: *Warning displayed in Driver Information Center (DIC).

Technician: Derek Bevis

DATA SHEET 30 (Part 5 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; DATE: 05/04/09

BRAKE SYSTEM WARNING INDICATOR LABELING (S5.5.5)

CONDITION AND REQUIREMENT	ANSWER NOTE: Standard requires that the answer to questions be YES	PASS	FAIL
Are visual indicators legible to driver in daylight and nighttime conditions when activated?	Yes	X	
Are visual indicator words 3.2 mm (.125") high minimum? Record Height: "Brake" – <u>3.2 mm</u> ; "ABS" – <u>3.2 mm</u> .	Yes	X	
Visual indicator words and background contrasting colors, one of which is red. Record colors <u>Letters – Red, Lens – Black</u>	Yes	X	
If split system, is there one brake indicator? If yes, does it say the word "Brake"?	Yes	X	
If not split system; is there a separate indicator for loss of fluid or fluid pressure? Does this indicator say "Stop-Brake Failure"? Are the letters block and not less than 6.4 mm (.25") in height? Record letter height _____	NA		
If separate indicator for: 1. Low brake fluid per S5.5.1(a)(1), does indicator say "Brake Fluid"? NOTE: not required for mineral oil system Record wording: _____ 2. Gross pressure loss per S5.5.1(a)(2), does indicator say "Brake Pressure"? Record wording _____ 3. Electrical functional failure in antilock or variable proportioning system per S5.5.1(b), letters and background contrasting colors one of which is yellow? Record colors <u>Lens – Black, Letters – Yellow</u> . Does indicator say "Antilock" or "ABS" or "Brake Proportioning"? Record wording: <u>"ABS" within symbol</u> . 4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording: _____ 5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording – <u>"Check Brake Pad Wear" w/symbol in DIC</u> . 6. If separate indicator for RBS, the letters and background shall be of contrasting colors, one of which is yellow. The indicator shall be labeled "RBS". RBS failure in a system which is part of the service brake system may also be indicated by a yellow lamp that also indicates "ABS" failure and displays the symbol "ABS/RBS." Record wording: _____ 7. For any other function? If yes, Record _____	NA NA Yes Yes NA No NA NA	X	

DATA INDICATES COMPLIANCE: YES X NO _____

Comments: None.

Technician: Derek Bevis

DATA SHEET 31 (Part 1 of 2)

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; DATE: 05/05/09

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 13.89 mm	3
		Primary	Post Test 13.03 mm	
		Inboard X	Δ 0.86 mm	
	Disc X	Trailing	Pre-test 13.84 mm	3
		Secondary	Post Test 12.93 mm	
		Outboard X	Δ 0.91 mm	
LINING CLEARANCE:	Diametrical (2): N/A	Inboard: 0.1 mm.	Outboard: 0.1 mm.	
WHEEL CYLINDER DIAMETER (3) N/A		CALIPER PISTON DIAMETER (3): 59.82 mm (x1 piston).		
SHOE CAGE DIAMETER (4) <u>N/A</u> ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C. <u>N/A</u>				
Right Rear	Drum	Leading	Pre-test 11.74 mm	3
		Primary	Post Test 11.23 mm	
		Inboard X	Δ 0.51 mm	
	Disc X	Trailing	Pre-test 11.48 mm	3
		Secondary	Post Test 11.18 mm	
		Outboard X	Δ 0.30 mm	
LINING CLEARANCE:	Diametrical (2) N/A mm	Inboard – 0.1 mm	Outboard – 0.1 mm	
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 37.86 mm (x1 piston).		
SHOE CAGE DIAMETER (4): N/A		CENTER POINT OF BRAKE ASSY TO CENTER PT. OF W.C.: N/A		
CIRCUIT #1 CONSISTS OF:	LF	LR - X	RF	RR - X
CIRCUIT #2 CONSISTS OF:	LF - X	LR	RF - X	RR
(1) MFRS. RECOMMENDATIONS – FRONT & REAR: 3 mm.				
(2) REAR – 0.1 mm. FRONT – 0.1 mm.				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE: NA.				
(3) MFRS. DATA: FRONT – 60 mm, 1 piston; REAR – 38 mm, 1 piston.				
(4) RESET POSITION: NA.				

Comments: Manufacturer's new total lining thickness: Front – 14 mm, Rear – 12 mm.

Technician: Derek Bevis

DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)Vehicle: 2009 Mercedes-Benz C300;NHTSA No.: C90513;Date: 05/14/09**Procedure and Example for Determining Master Cylinder Volume Requirement**

The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page, both measured and manufacturer's data.

DISC BRAKES

Volume Required, $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times [\pi (D^2)]/4$, where –

- V_r = Volume required per wheel
- Δt = Change in thickness (average)
- i = Inboard
- o = Outboard
- D = Caliper cylinder diameter
- c = Average clearance

Using the above equations, the volume requirements for Subsystem No. 1 (LR/RR) and Subsystem No. 2 (LF/ RF) were calculated utilizing measured and manufacturer's provided data to create the greatest displacement, as shown below:

Disc Brake:
(Front)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi D^2}{4}$$

$$\Delta t_i = 11 \text{ mm}$$

$$\Delta t_o = 11 \text{ mm}$$

$$t_{ic} + t_{oc} = 0.2 \text{ mm}$$

$$D = 60 \text{ mm}$$

$$V_r = (11.0 + 0.1 + 11.0 + 0.1) \frac{\pi (60)^2}{4}$$

$$= 22.2 (2827.43)$$

$$= 62769.0 \text{ mm}^3 = 62.8 \text{ ml (x1 Piston)} = 62.8 \text{ ml}$$

Disc Brake:
(Rear)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi D^2}{4}$$

$$\Delta t_i = 9 \text{ mm}$$

$$\Delta t_o = 9 \text{ mm}$$

$$t_{ic} + t_{oc} = 0.2 \text{ mm}$$

$$D = 38 \text{ mm}$$

$$V_r = (9.0 + 0.1 + 9.0 + 0.1) \frac{\pi (38)^2}{4}$$

$$= 18.2 (1134.11)$$

$$= 20640.9 \text{ mm}^3 = 20.6 \text{ ml (x1 Piston)} = 20.6 \text{ ml}$$

For System 1 (LR & RR)

$$V_{r1} = 20640.9 \text{ mm}^3 + 20640.9 \text{ mm}^3 = 41281.8 \text{ mm}^3$$

$$V_{r1} = 41281.8 \text{ mm}^3 = (41.3 \text{ ml})$$

For System 2 (LF & RF)

$$V_{r2} = 62769.0 \text{ mm}^3 + 62769.0 \text{ mm}^3 = 125538.0 \text{ mm}^3$$

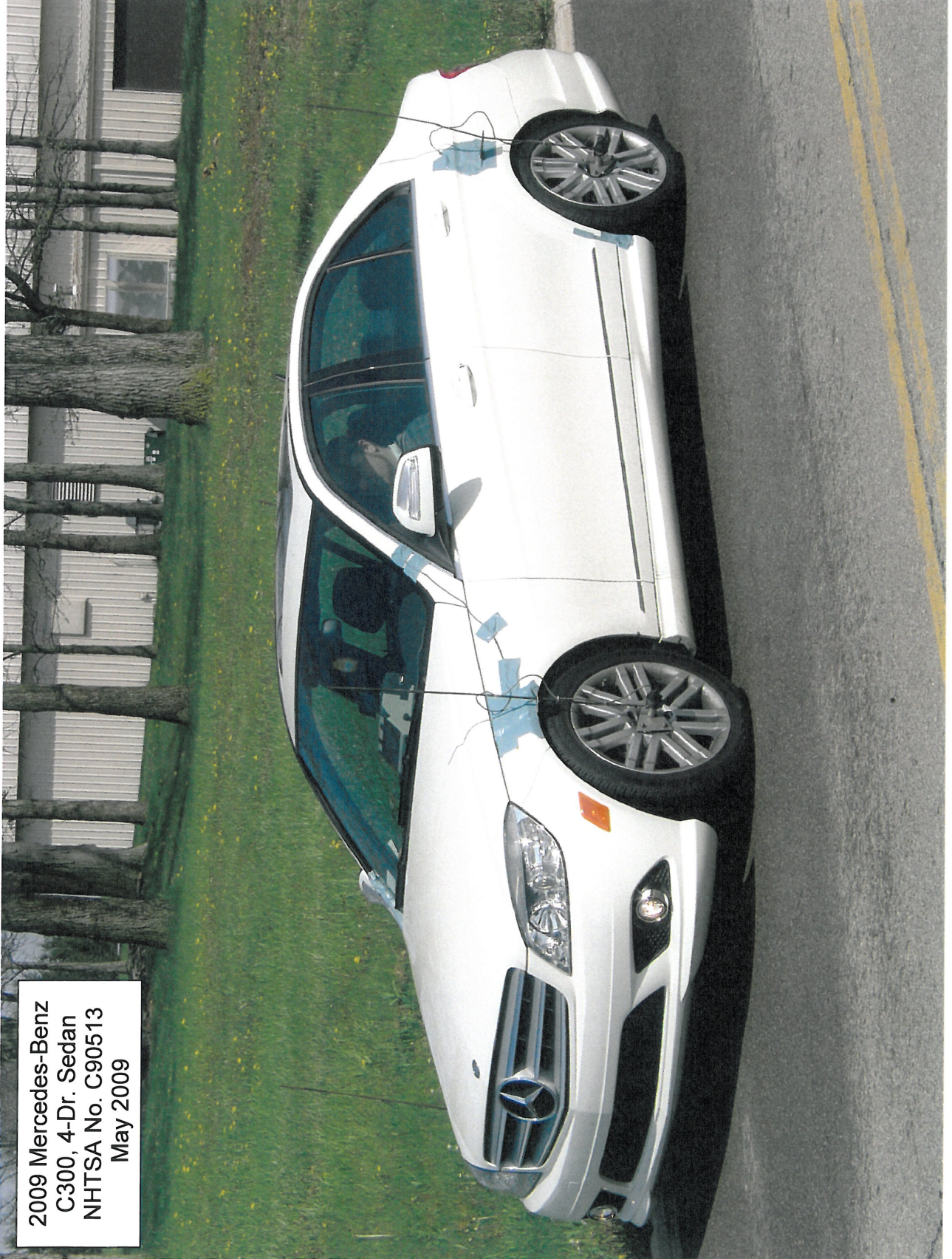
$$V_{r2} = 125538.0 \text{ mm}^3 = (125.6 \text{ ml})$$

$$\text{TOTAL VOLUME REQUIRED} = V_t = V_{r1} + V_{r2} = 41.3 + 125.6 = 166.9 \text{ ml}^*$$

Section 6.0

Photographs

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Left Front 3/4 View



2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

Right Rear 3/4 View

MFD BY DAIMLER AG STUTTGART

07/08

C650

PASSENGER CAR

KG LBS

GVWR

2040 4497

GAWR FRONT

995 2193

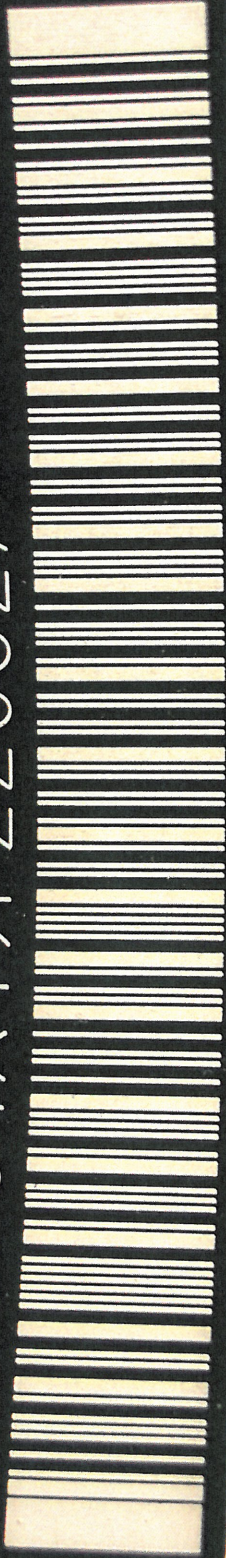
GAWR REAR

1085 2391

THIS VEHICLE CONFORMS TO ALL APPLICABLE
U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER
AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE

WDDGF54X49F226527

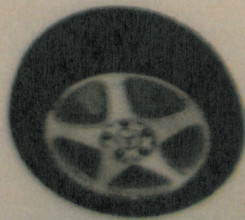
MADE IN GERMANY



2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

Vehicle Certification Placard

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



TIRE AND LOADING INFORMATION

SEATING CAPACITY	TOTAL	5	FRONT	2	REAR	3
------------------	-------	---	-------	---	------	---

The combined weight of occupants and cargo should never exceed **375 kg** or **826 lbs.**

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
225/45 R17	FRONT	190 KPA, 28 PSI
245/40 R17	REAR	230 KPA, 33 PSI
COMPACT SPARE TIRE	COLD TIRE INFLATION PRESSURE	
T125/90 R16 98M	420 KPA, 60 PSI	

SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION

0171114 A 204 584 26 17

Tire Information Label

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



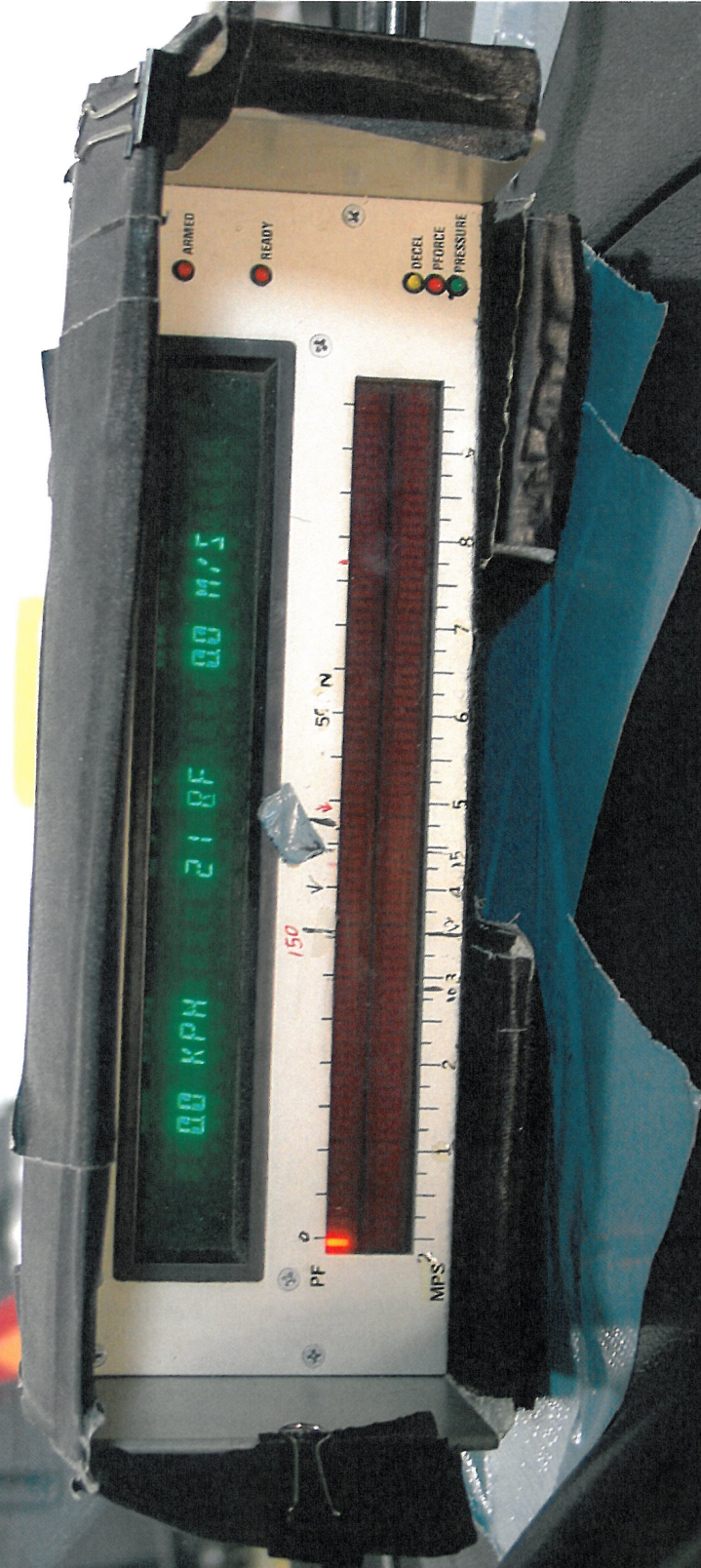
Left Front Thermocouple Installation

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



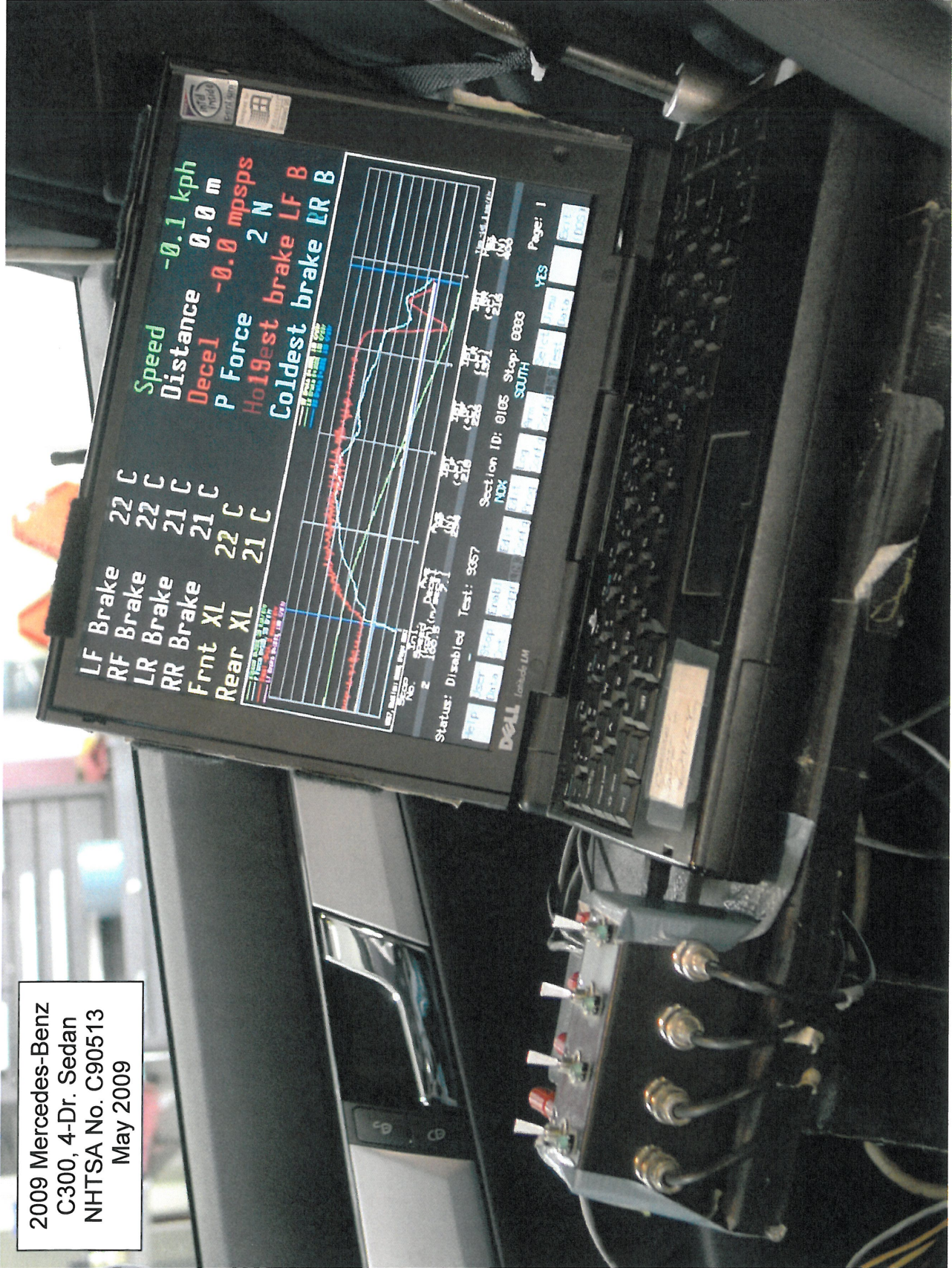
Right Rear Thermocouple Installation

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Test Instrumentation in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Test Instrumentation in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



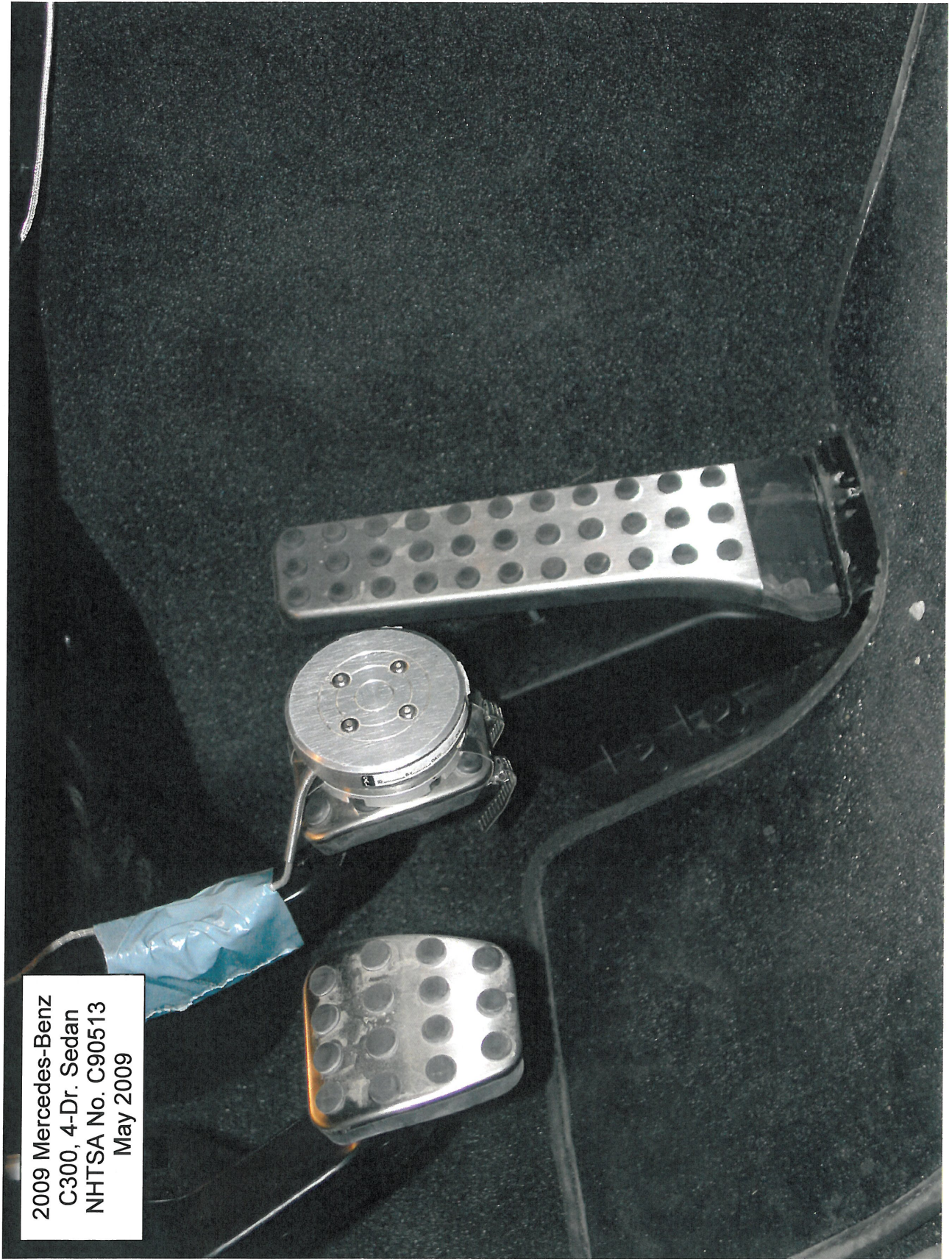
Test Instrumentation in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



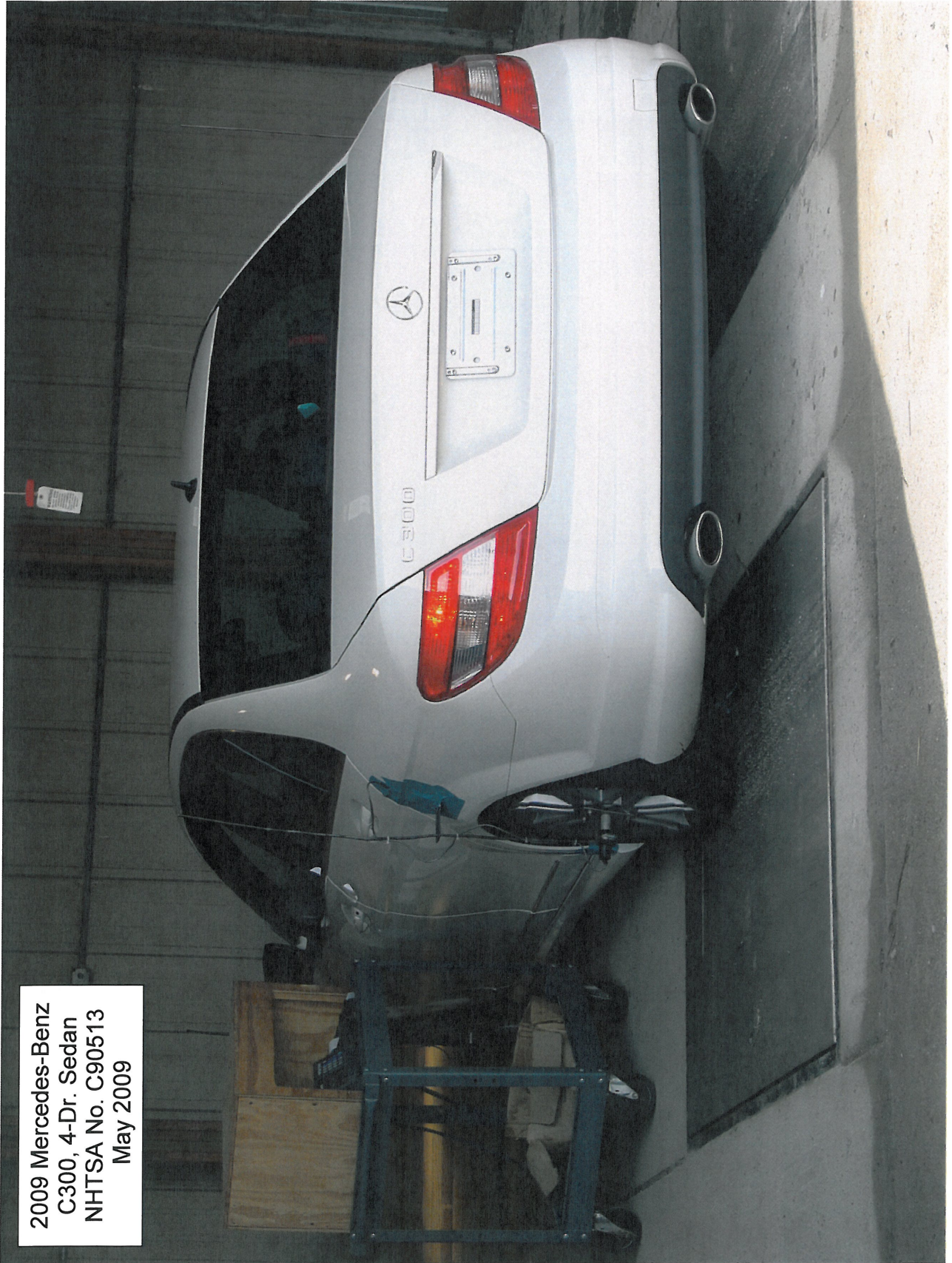
Test Instrumentation in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Test Instrumentation in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

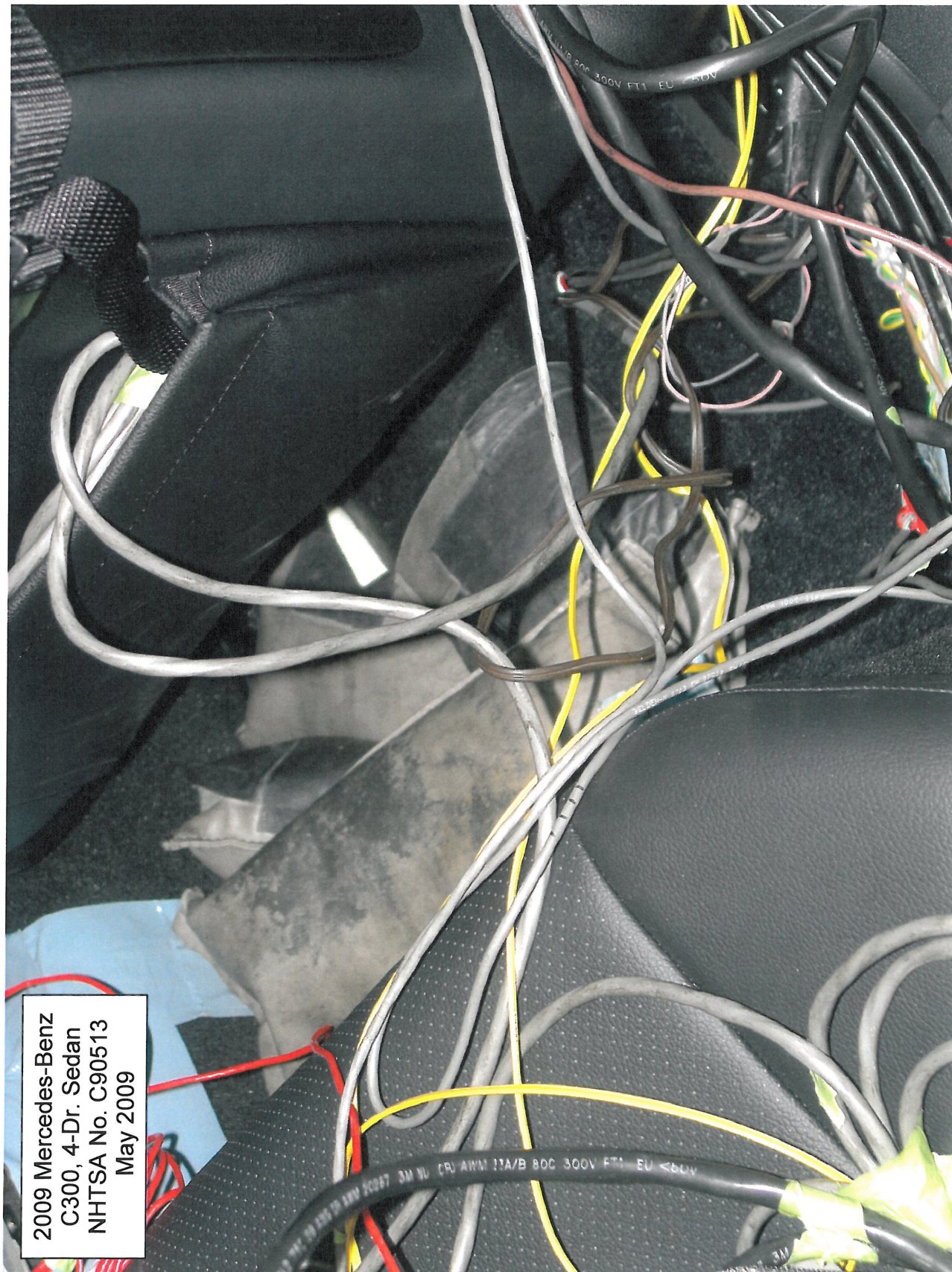


Vehicle Being Weighed



2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

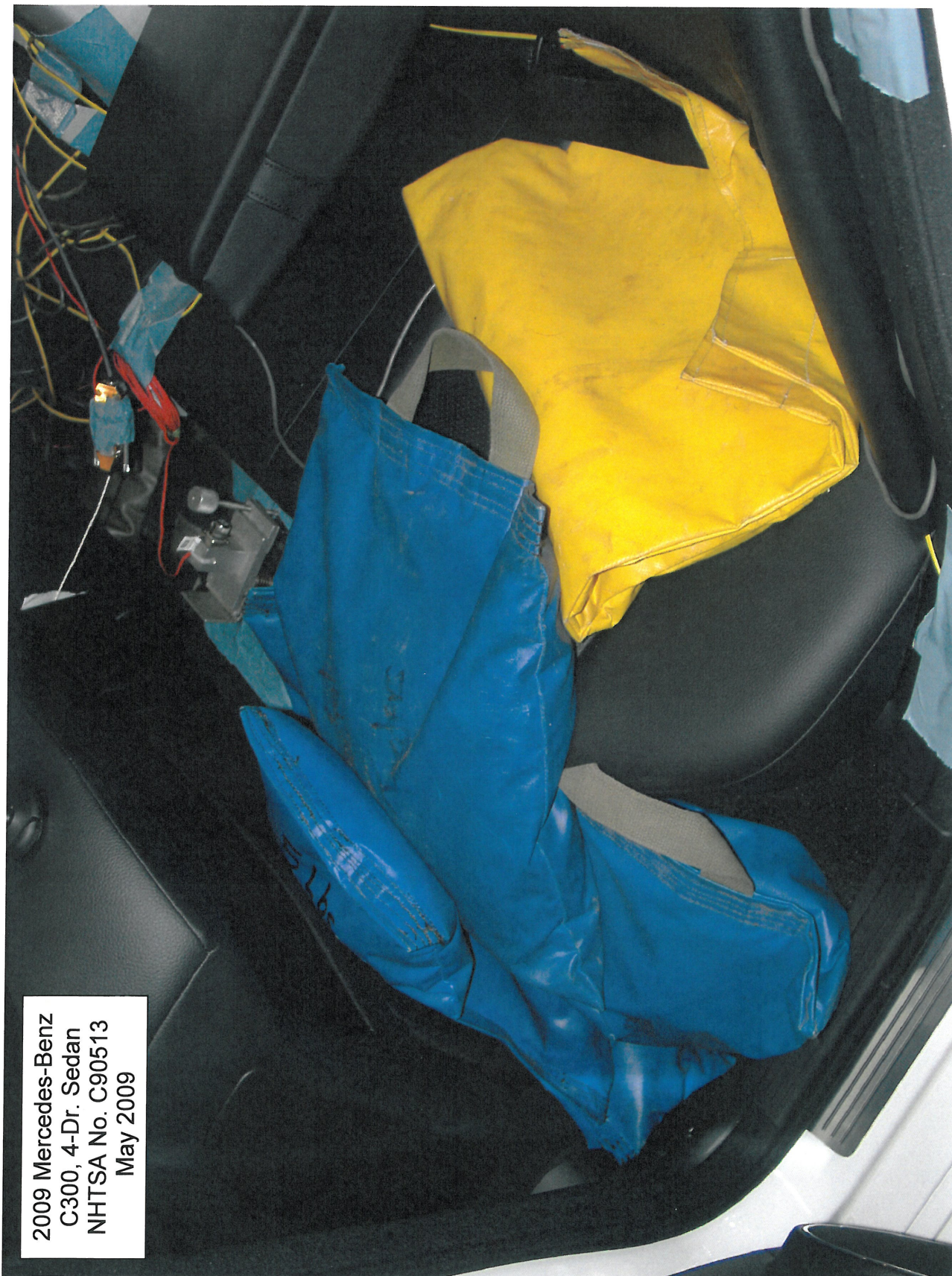
Ballast in Vehicle



2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

Ballast in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



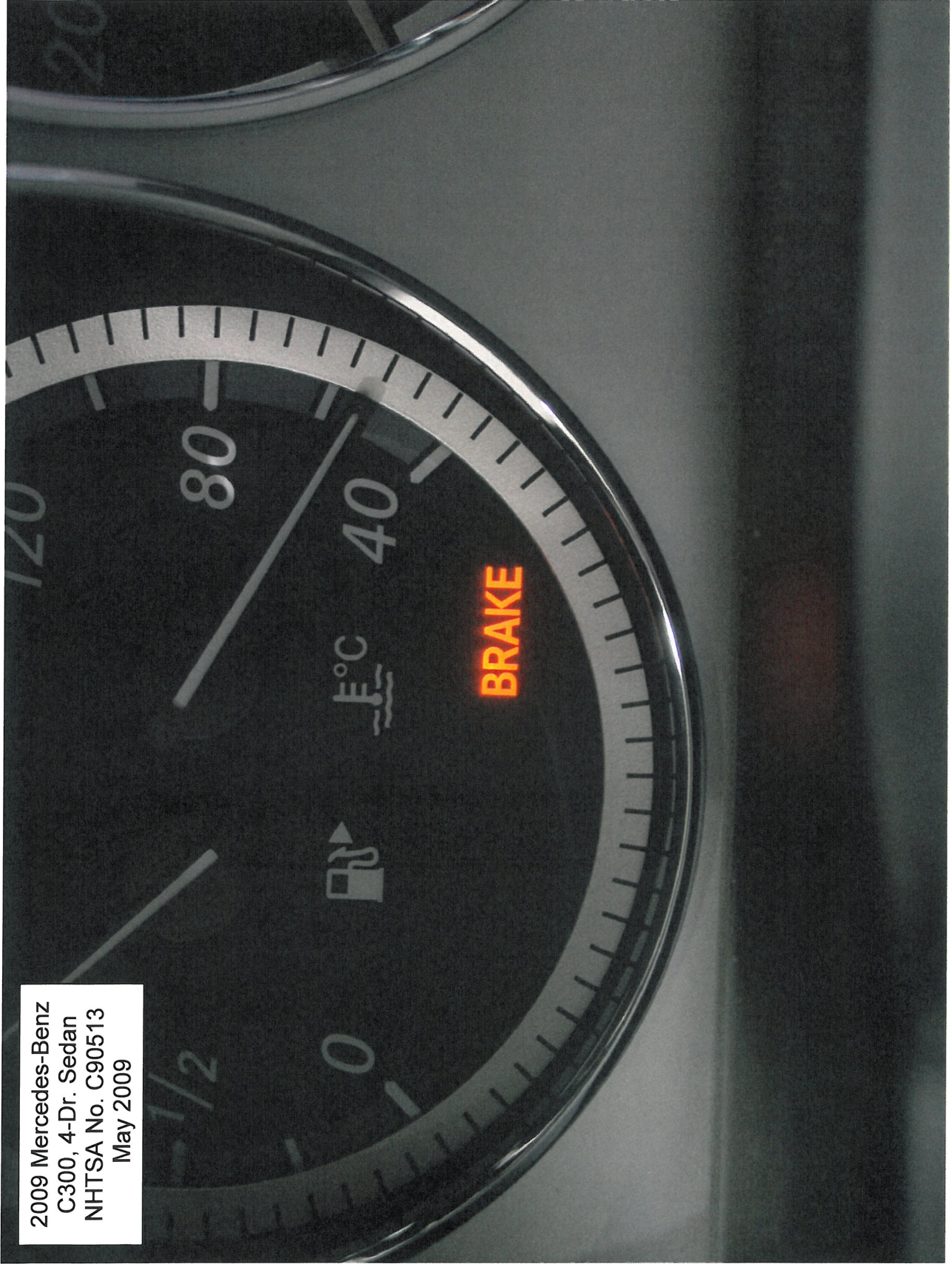
Ballast in Vehicle



2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009

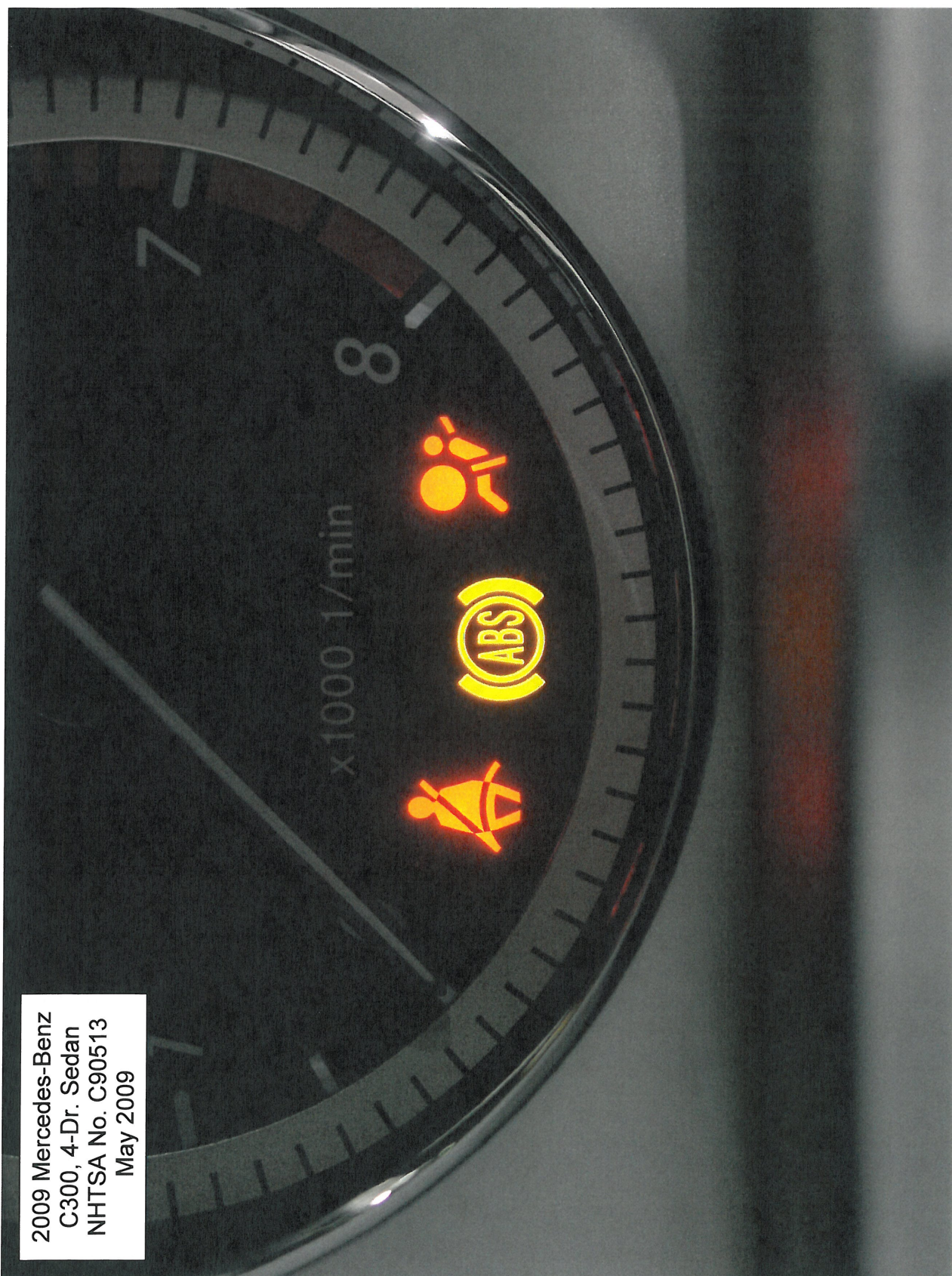
Ballast in Vehicle

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



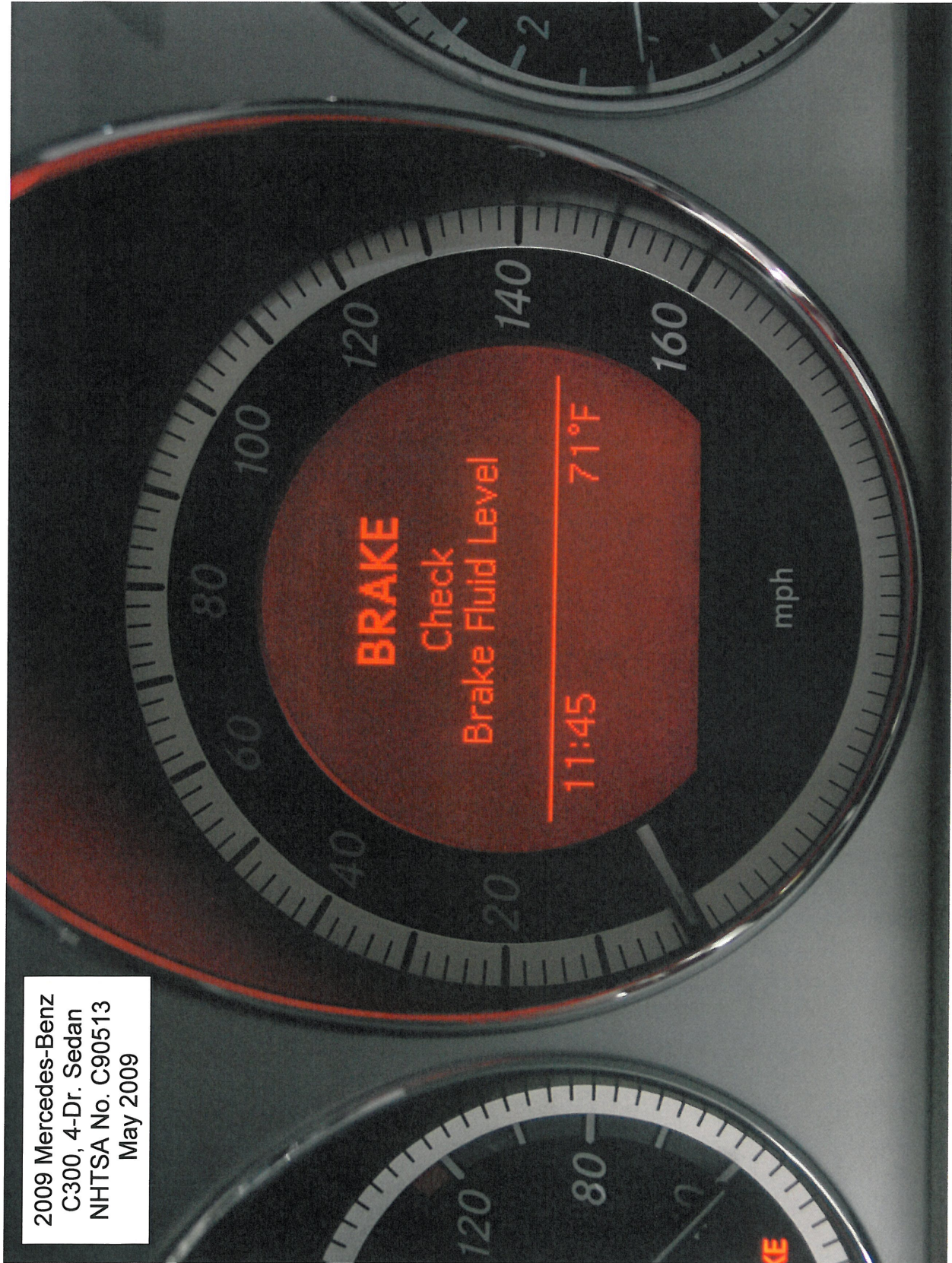
Brake System Indicator (Warning) Lamp

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



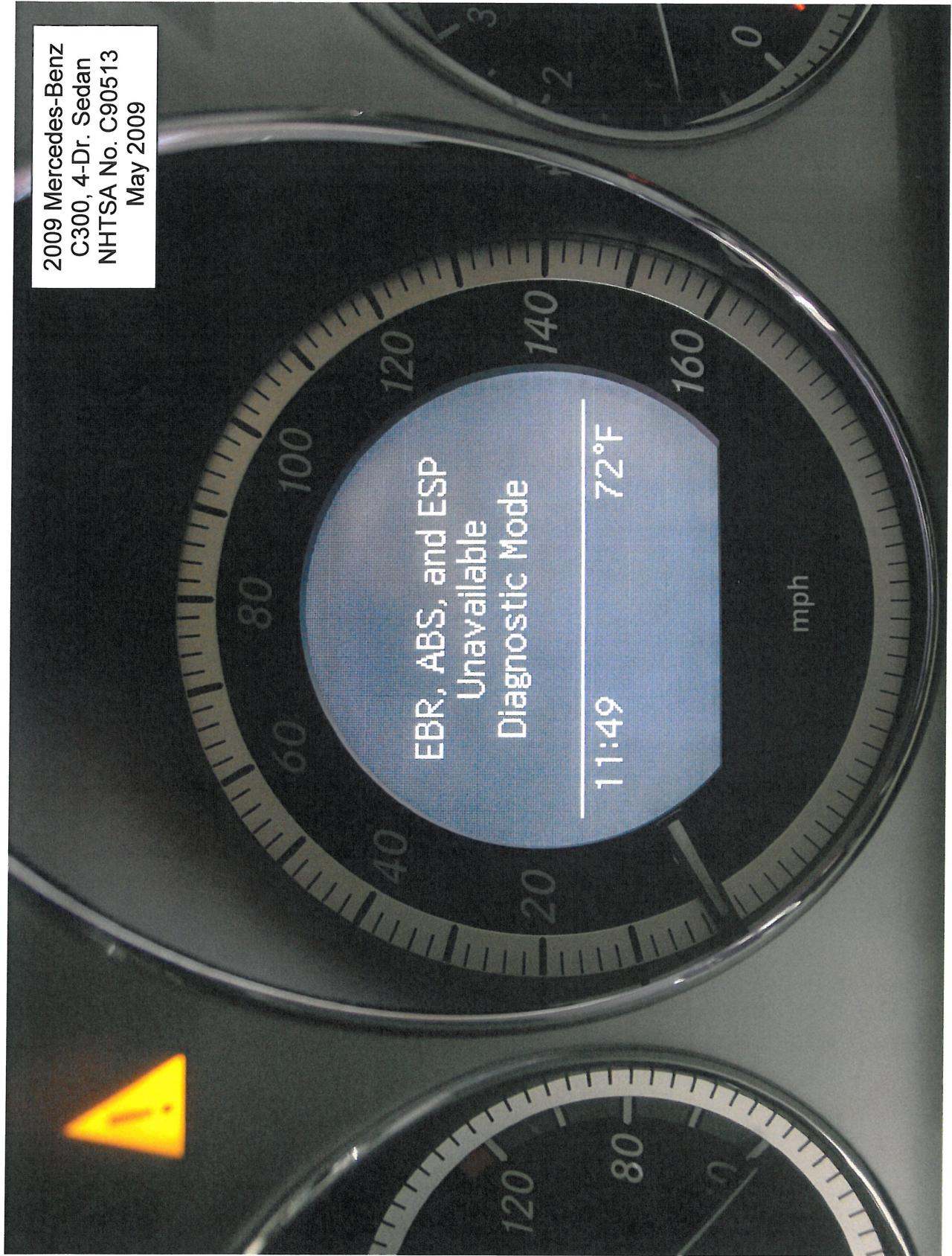
ABS Indicator (Warning) Lamp

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Brake System Indicator (Driver Information Center) Warning

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Brake System Indicator (Driver Information Center) Warning

2009 Mercedes-Benz
C300, 4-Dr. Sedan
NHTSA No. C90513
May 2009



Brake System (Master Cylinder) Reservoir Warning Label

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2009 Mercedes-Benz C300; NHTSA NO.: C90513; DATE: 04/20/09

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2082	980382	06/11/08	06/11/09
Computer – Dell/Link Engrg.	TRC-43207	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch – Fisher Scientific (Heating Snubs)	SN-97216633	08/27/08	08/27/09
Stopwatch – Radio Shack (Daily Cals)	SW-ST04	10/26/08	10/26/09
Tire Pressure Gauge – WIKA	AG-101 97216633	02/05/09	05/06/09
Pedal Force Transducer – Sensor Devel.	169755	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0001	06/04/08	06/04/09
Park Brake Force Transducer – Lebow	LC-42631	Each Test	Each Test
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or – 15 g) 141A	A-1055763	Each Test	Each Test
Fifth Wheel – ADAT DSR6/1aa Radar	07030215461	Each Test	Each Test
Wind Velocity/Direct. – Davis Model 6410	050608N22	07/13/08	07/13/09
Ambient Temp. Gage–Davis Mod. 6150	050608N02	07/13/08	07/13/09
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000000, (Bldg. 70)	SN 5225831- 5JC	02/18/09	05/18/09

QUALITY ASSURANCE

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2009 Mercedes-Benz C300

NHTSA No.: C90513

Deceleration Calibration Data for Unit 9357

Desired full scale value is: 9.81 m/s/s

Allowed deviation is: + or - 0.15 m/s/s

Accelerometer Level to zero, then tilt to full scale

"Date"	"Time"	Zero	Cal
"stp"	"stp"	"Decel"	"Decel"
4/20/2009	14:59:49	-0.01	9.81
4/21/2009	13:51:01	0.00	9.82
4/22/2009	10:15:18	-0.01	9.75
4/22/2009	15:46:43	-0.04	9.81
4/23/2009	8:20:23	0.04	9.78
4/24/2009	8:36:07	-0.03	9.76
4/24/2009	15:39:08	-0.01	9.71
4/28/2009	8:31:00	0.00	9.80
4/29/2009	8:21:21	0.01	9.83
5/1/2009	11:36:36	-0.01	9.78

PRE TEST CAL.

POST TEST CAL.

Pre-Test Linearity Check 04/20/2009

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Post-Test Linearity Check 05/01/2009

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Distance Calibration Data for Unit 9357

Desired full scale value is: 1000 m

Allowed deviation is: 3 m

Light beam Drive from 0 to 100 to 0 km/h
distance sensor on a measured kilometer

"Date"	"Time"	Distance for
"stp"	"stp"	1000 meters
4/21/2009	13:45:22	1000.0
4/22/2009	10:21:31	1000.2
4/22/2009	15:43:10	1001.3
4/23/2009	8:25:49	1000.6
4/24/2009	8:39:20	999.7
4/24/2009	15:43:43	1000.1
4/28/2009	8:35:28	1000.1
4/29/2009	8:26:17	1000.1
5/1/2009	10:15:41	1001.1

PRE TEST CAL.

POST TEST CAL.

DAILY CALIBRATIONS CONTINUED (2 of 3)

Vehicle: 2009 Mercedes-Benz C300

NHTSA No.: C90513

Wheel Tachometer Calibrations for Unit 9357

Wheel tachometer calibrations: all wheel speeds should be 15 km/h

Wheel Lock Detector	While at a standstill, check zeros.	"Date"	"Time"	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	
		stp	stp	LF	LF	RF	RF	LR	LR	RR	RR	
		4/24/2009	8:30:09	0.0	17.0	0.0	17.3	0.0	16.9	0.0	17.5	PRE TEST CAL.
		4/24/2009	15:40:32	0.0	16.7	0.0	16.8	0.0	16.6	0.0	17.1	
		4/28/2009	8:38:15	0.0	17.0	0.0	17.0	0.0	17.0	0.0	17.6	
		4/29/2009	8:16:29	0.0	17.0	0.0	17.0	0.0	17.0	0.0	17.6	
		5/1/2009	10:09:47	0.0	20.6	0.0	21.0	0.0	20.8	0.0	18.1	POST TEST CAL.

When driven over 15 km/hr and the wheel tack generators are shunted to zero volts, does the graphical screen indicate wheel lock at each wheel position? X Yes No.

Pedal Force Meter Calibration for Unit 9357

Target shunt calibration is 386 N

Desired recorded value is: 386 N

Desired recorded actual force calibration check value is: 500 N

Allowed deviation is: 6.5 N

Service brk. pedal effort	Driver engages a fixed shunt cal switch.	"Date"	"Time"	Zero	Cal Val	
		stp	stp	Force	Force lb	
		4/20/2009	15:05:58	-1.1	498.6	PRE TEST CAL.
		4/21/2009	13:50:03	-0.5	386.7	
		4/22/2009	10:14:28	-0.5	386.6	
		4/22/2009	15:46:07	-0.8	386.8	
		4/23/2009	8:19:38	-0.2	386.5	
		4/24/2009	8:35:44	-0.4	386.4	
		4/24/2009	15:38:39	-0.4	386.5	
		4/28/2009	8:30:12	-0.2	386.7	
		4/29/2009	8:20:34	-0.4	386.3	
		5/1/2009	11:55:29	-0.1	496.7	POST TEST CAL.

Pre-Test Linearity Check - 04/20/09

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	445
498	498

Post-Test Linearity Check - 05/01/09

Actual	Recorded
Force (N)	Force (N)
0	0
222	223
445	443
498	496

Parking Brake Transducer Cal: Shunt Cal - 938 N, Unit 9357 - 04/29/09

Pre-Test

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	445
498	498

Post-Test

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	445
498	498

DAILY CALIBRATIONS CONTINUED (3 of 3)

Vehicle: 2009 Mercedes-Benz

NHTSA No.: C90513

Dynamic Speed Calibration for Unit 9357

Desired speed value is: 100 km/h

Allowed deviation is: 1.6 km/h

Desired time value is: 36 seconds

Allowed deviation is: + or - 0.6 seconds

Light beam Drive vehicle
speed sensor at a steady
100 km/h
through a
kilometer.

"Date"	"Time"	"Speed"	Time"
stp	stp	km/h	sec
4/21/2009	13:53:48	100.6	36.12
4/22/2009	10:19:06	100.4	36.12
4/22/2009	15:41:55	100.4	36.38
4/23/2009	8:21:28	100.7	36.03
4/24/2009	8:37:22	99.9	36.31
4/24/2009	15:42:00	100.2	36.14
4/28/2009	8:33:21	100.6	36.10
4/29/2009	8:23:56	100.8	36.07
5/1/2009	10:13:30	100.3	36.13

PRE TEST CAL.

POST TEST CAL.

APPENDIX A

Copy of Manufacturer's Sticker



Mercedes-Benz

2009 C300

3.0 Liter Dual Overhead Cam 24V V6

PO#: 0970432351

VIN: WDDGF54X49F226527

SOLD TO:
ENTERPRISE MOTORCARS, INC.
3002 VICTORY LANE
FARMINGTON, CT 06030
FARMINGTON, CT 06030
FARMINGTON, CT 06030
FARMINGTON, CT 06030

SUGGESTED RETAIL PRICE

PAINT/UPHOLSTERY & TRIM

650 Arctic White
101 Black MB-TEX

\$32,100

N/C
N/C

OPTIONAL EQUIPMENT AND VALUE ADDED PACKAGES

411 6-Speed Manual Transmission
333 Sport Sedan: Sport Body Styling, Mercedes-Benz Star in Grille, 17" Staggered-width Alloy Wheels with All-Season Tires, Sport Suspension and Braking System, Sport Interior, Aluminum Trim

Destination and Delivery
Total Retail Price

875.00
\$32,975.00

PERFORMANCE/HANDLING

- 228 Horsepower @ 6,000 RPM
- 221 lb-ft Torque @ 2,700-5,000 RPM
- Front Suspension: 3-link Independent
- Rear Suspension: Multi-link Independent with Stabilizer Bar

COMFORT/CONVENIENCE

- Power Sunroof with Express Open and Close
- Dual-Zone Automatic Climate Control with Dust Filter
- 8-Way Power Front Seats with Lumbar Support
- Single Disc CD/MP3/AM/FM/Weatherband Radio
- 8-Speaker Sound System with Auxiliary Input
- Bluetooth Connectivity for Hands-free Phone Use
- Leather Multi-Function Steering Wheel
- Central Controller with 5" Display
- 4.5" Instrument Cluster Display
- Front and Rear Cupholders
- Tilt & Telescoping Steering Column
- Cruise Control
- Intermittent Wipers
- Power Windows with Express Up and Down
- Automatic Headlamps with Twilight Sensor & Locator Lighting
- Trip Computer

SAFETY/SECURITY

- New Vehicle 4 Year/50,000 Mile Warranty
- 24 hr. Roadside Assistance Program
- Owner Information Kit
- Mercedes-Benz Maintenance System
- Steel Reinforced Cabin w/ Front & Rear Crumple Zones
- Front & Rear Outboard Seatbelts w/Pre-Tensioners & Force Limiters
- Side Airbags Mounted in Front Seat Backrests
- Side Airbags Mounted in Front Seat Backrests
- Head Protection Curtains
- Dead Front Pedal Airbags
- Active Front Head Restraints
- 4-Wheel ABS Disc Brakes with Brake Assist System
- Electronic Stability Program (ESP)
- Anti-Slip Regulation (ASR)
- LATCH-Lower Anchors and Tethers for Children
- Anti-theft Alarm with Engine Immobilizer
- SmartKey with Panic Button
- Tire Pressure Monitoring System

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

CITY MPG

18

Expected range for most drivers 14 to 22 MPG

HIGHWAY MPG

26

Expected range for most drivers 21 to 31 MPG

Estimated Annual Fuel Cost \$2,142

based on 15,000 miles at \$3.00 per gallon

Combined Fuel Economy

This Vehicle

21

11 42

All Compact

Your actual mileage will vary depending on how you drive and maintain your vehicle.



See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov



www.MBUSA.com

GOVERNMENT SAFETY RATINGS

Frontal Crash ★★★★★

Driver Passenger ★★★★★

Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash ★★★★★

Front seat Rear seat ★★★★★

Star ratings based on the risk of injury in a side impact.

Rollover ★★★★★

Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.

Source: National Highway Traffic Safety Administration (NHTSA).

VISIT www.safercar.gov

APPENDIX B

Discussion on Data

DISCUSSION ON DATA

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INT or INIT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

All stops were made manually.

APPENDIX C

Contractor's Comments Procedure Modifications and Test Facility

Comments for vehicle C90513.

For all recorded decelerations:

The recorded *average* deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence, the recorded average deceleration values were generally and slightly less than the required/target deceleration values.

For Data Sheet 16 – Antilock Functional Failure at LLVW, the laboratory utilized a procedure provided by the manufacturer that used the “telephone” buttons on the steering wheel to access a diagnostic mode displayed on the Driver’s Information Center (DIC). Once the ABS was rendered inoperative, the “ABS” lamp came on and the DIC displayed: “EBR, ABS and ESP Unavailable Diagnostic Mode.” These same warnings and lamp came on during testing for Data Sheet 22 – Antilock Functional Failure at GVWR.

For Data Sheets 18 through 21 – Hydraulic Circuit Failures #1 and #2 at GVWR and LLVW, the master cylinder output ports were disconnected at the ABS modulator, rather than at the master cylinder due to the close proximity of other under hood componentry. Circuit Failure #1 relates to the front master cylinder port and Circuit Failure #2, to the rear. Upon each of these failures, the “BRAKE” lamp came on as well as the DIC displaying: “BRAKE: Check Brake Fluid Level.”

The Hydraulic Circuit Failure Tests were not performed to the lab procedure sequence to both save time and cause minimal disruption to the hydraulic brake system. Sequence: Circuit #1 @ LLVW, Circuit #2 @ LLVW, Circuit #2 @ GVWR, and Circuit #1 @ GVWR.

For Data Sheet #26 – Heating Snubs at GVWR, the driver mistakenly stopped the stopwatch interval timer. Re-setting the watch and re-engaging took a short time that is reflected in an increase for “time between snubs,” between snubs #1 and #2.

For Data Sheet #29 – Recovery Performance at GVWR, due to test track conflicts, the driver moved from the Test Track to the Skid Pad immediately after the first stop via the gravel emergency access road. Traversing the short access road, the vehicle’s left rear thermocouple lead broke. Therefore, there was no left rear brake temperature data for the second stop. The driver was able to rapidly accelerate in Lane 2 of the Skid Pad and successfully perform stop two with little time or distance lost relative to remaining on the Test Track.

The laboratory was unable to remove the master cylinder for internal measurements due to the close proximity of other components under the hood. Markings underneath the master cylinder were: “3.5,” “E8” within a circle and “2/6” within a circle. On the forward end of the master cylinder was etched: “WL858.”

7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600-acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straightaways of 3/16 inch per foot. The 1.88 mile long straightaways flow into transition areas 2,300 feet in length and then into 5,275-foot long curves with a constant radius of 2,400 feet. The 36-foot wide straightaways and the 42-foot wide curves provide three test lanes. Paved berms, 12 feet in width, border the straightaways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5-mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

TRC SKID PAD

The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

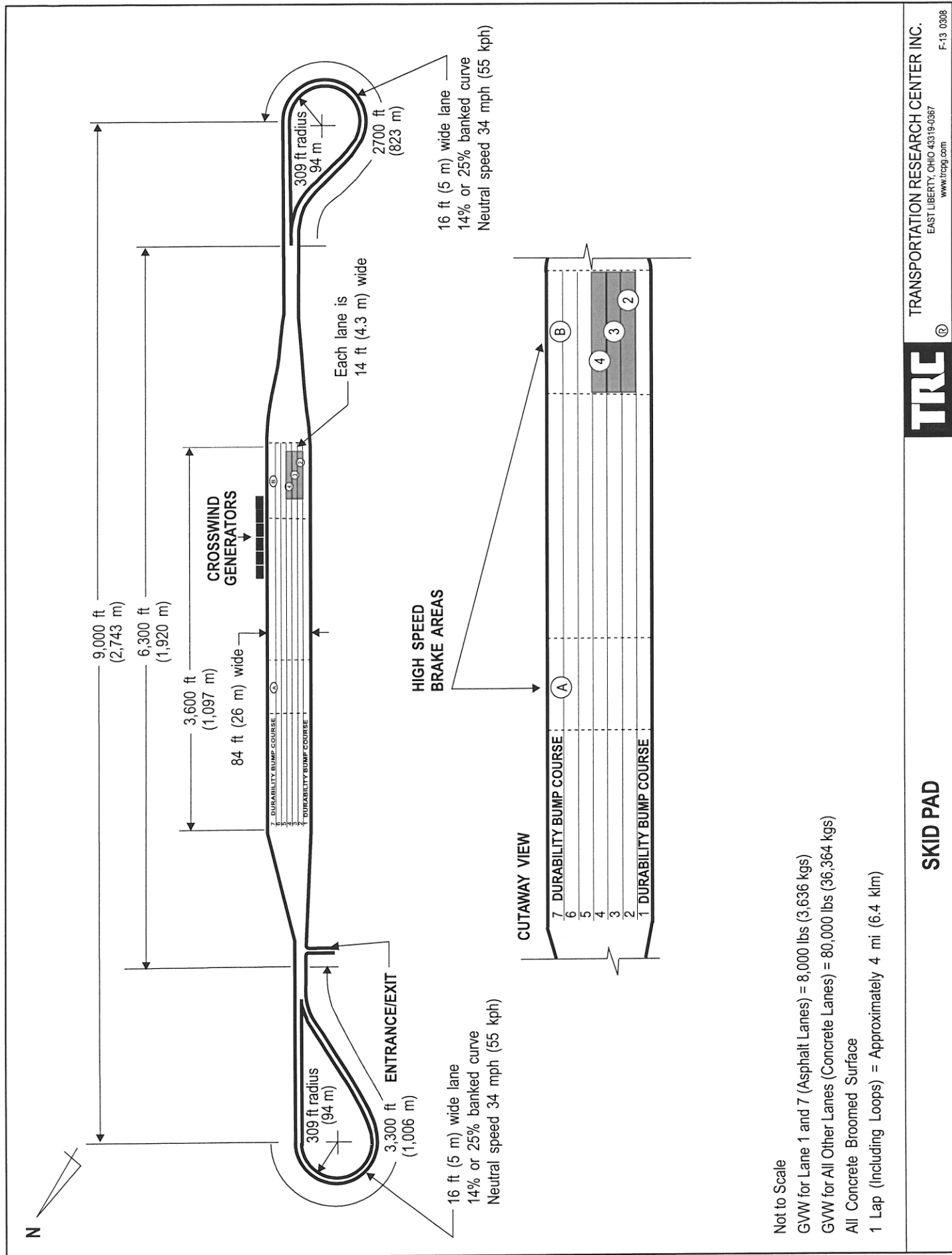
The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

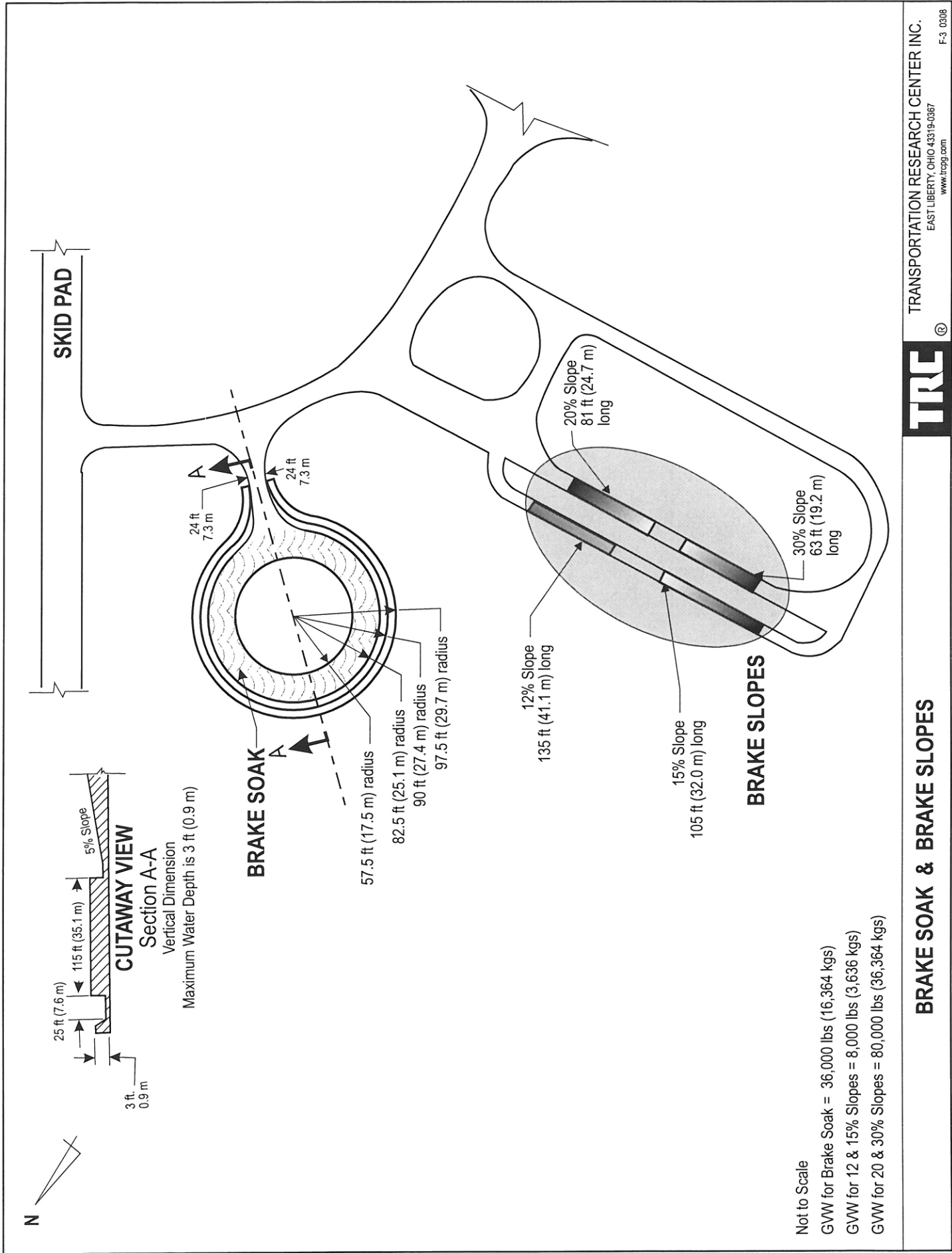
The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top speed determination.

The subject test vehicle was rear wheel anti lock equipped. Rather than rapidly and fully applying the service brake control, the driver modulated the service brake control as necessary to control/prevent front wheel lock.



Not to Scale
 GVW for Lane 1 and 7 (Asphalt Lanes) = 8,000 lbs (3,636 kgs)
 GVW for All Other Lanes (Concrete Lanes) = 80,000 lbs (36,364 kgs)
 All Concrete Broomed Surface
 1 Lap (Including Loops) = Approximately 4 mi (6.4 klm)

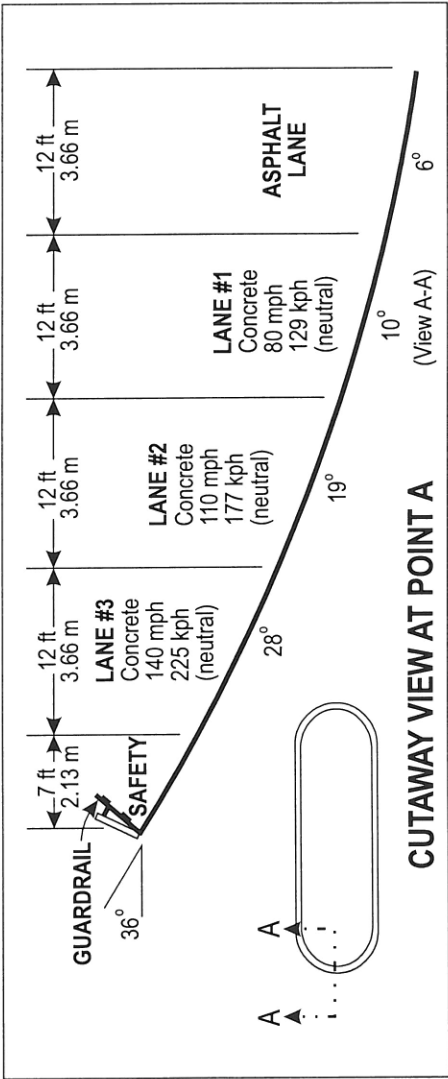
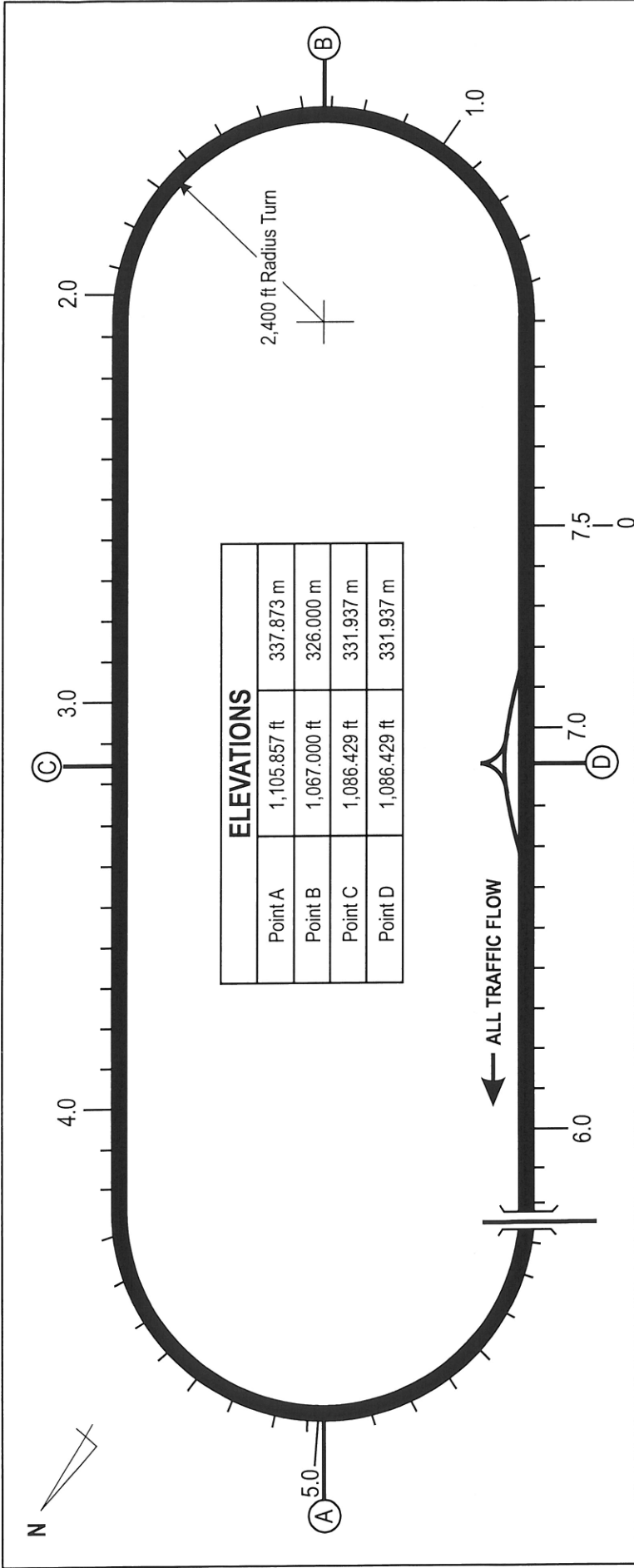


BRAKE SOAK & BRAKE SLOPES

TRC®

TRANSPORTATION RESEARCH CENTER INC.
EAST LIBERTY, OHIO 43319-0367
www.trcpg.com

F-3 0308



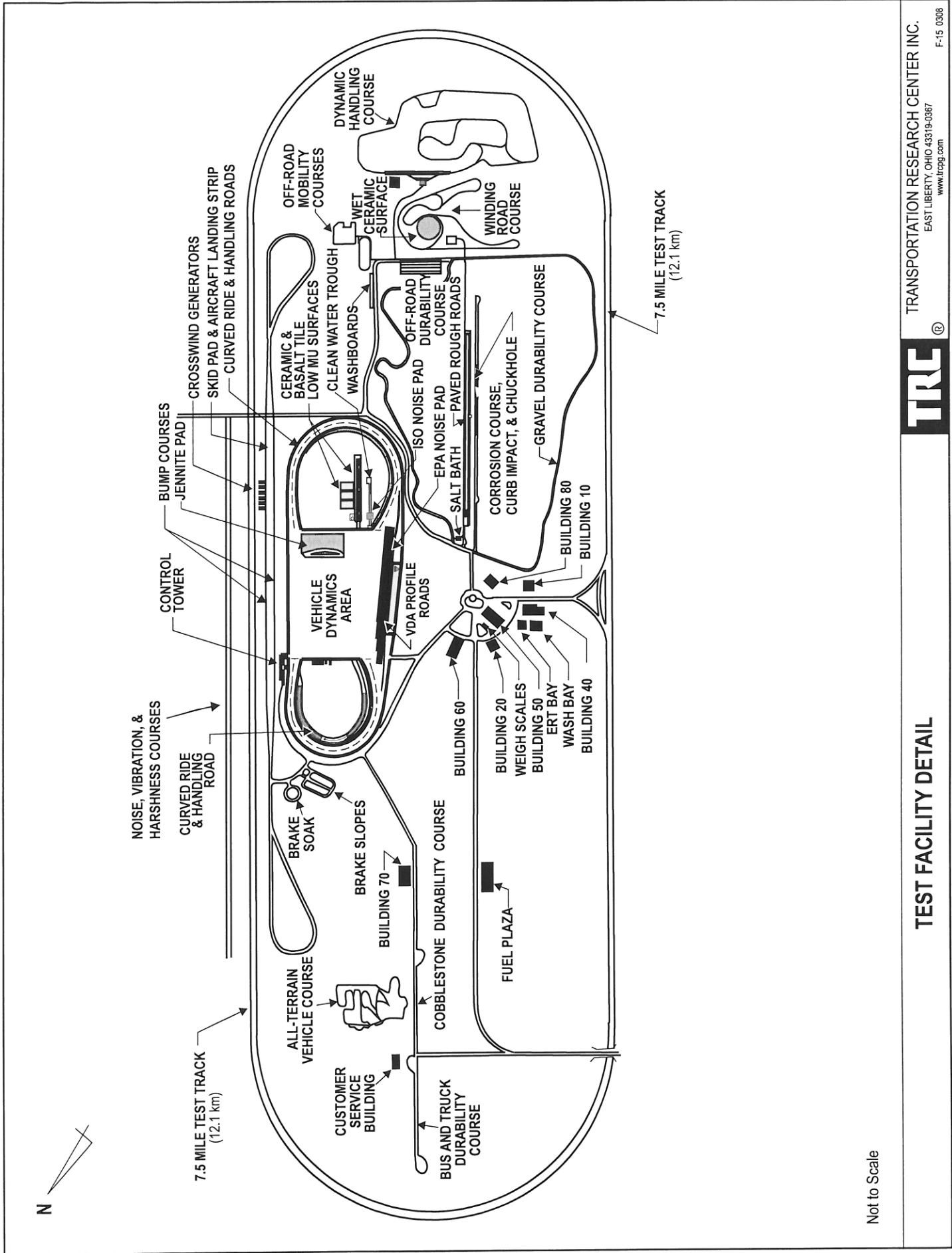
DISTANCES		
Lane 3	7.539 mi	12.133 km
Lane 2	7.521 mi	12.104 km
Lane 1	7.507 mi	12.081 km
Point A to Point B	3.333 mi	5.364 km
Point C to Point D	.947 mi	1.524 km

Not to Scale

GVW for Asphalt Lanes = 8,000 lbs (3,636 kgs)

GVW for Concrete Lanes = 80,000 lbs (36,364 kgs)

7.5-MILE TEST TRACK



Not to Scale

TEST FACILITY DETAIL



TRANSPORTATION RESEARCH CENTER INC.
EAST LIBERTY, OHIO 43319-0367

www.trcpg.com

F-15 0308

APPENDIX D

Notice of Possible Non-Compliance

This vehicle (C90513) met the requirements of the FM VSS 135 Standard.